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Stem Cell Research: America’s Medical Phenomenon

Sample Student Paper #3

Sample High School

Abstract

President Obama's Executive Order 13505 allows the Federal Government to fund stem cell research through the National Institute of Health. There are various types of stem cells, but the issue is over embryonic stem cells. President George W. Bush's Executive Order was removed when President Obama came out with his Executive Order. Currently stem cell research is being broadened, but embryonic stem cells still cannot be fully experimented on because they can't be created using cloning or destroyed. There is great controversy over whether the government should allow scientists to make embryos using cloning and experiment on them. By expanding stem cell research and funding without killing embryos, it encourages scientists to find other methods of obtaining pluripotent stem cells.

Stem Cell Research: America's Medical Phenomenon

Policy Identification

President Obama's Executive Order 13505 states that the Federal Government can fund human embryonic stem cell research. This order removes the old restrictions placed on stem cell research and allows the National Institute of Health (NIH) to conduct stem cell research. The previous restrictions placed by President Bush were that minimal funding would be available to go towards stem cell research, and the Executive Order says that funding for both human non-embryonic and embryonic stem cell research that will be expanded (United States Government, 2009).

History and Background

Stem cell research has made great advances throughout the last several years (Hyde, 2001). As defined by Helen Gavaghan in "The Promise of Stem Cells" in 2001, a stem cell is "a cell that can divide to give both another stem cell and a more specialized cell" (p. 35). The work of stem cells all began when stem cells were first discovered in 1961 in mice bone marrow by James Till and Ernest McCulloch. In 1981 Martin Evans and Gail Martin found stem cells using mouse embryos (Thompson, 2009). In November of 1995 the University of Wisconsin discovered that it is possible to get embryonic stem cells using primates (Godoy, Novey & Palca, 2007). With the discovery of stem cells it has been realized that there is potential to cure diseases such as Multiple Sclerosis and Parkinson's disease (King, 2003).

There are three different types of stem cells: embryonic, fetal, and adult stem cells. All of which have the capability of repairing cells in the body. Adult stem cells are the most restricted cell because they can't grow into any type of tissue. They can only grow into specific cells that are already dictated by the type of tissue they come from. Fetal stem cells are more flexible and

easy to work with than adult stem cells; however they are still limited because the stem cells have already decided what kind of tissue they are going to produce. For example, the skin stem cells won't produce anything but skin cells. Embryonic stem cells have the greatest potential to develop into any cell in the human body and are thus named the universal stem cell. The ability to become any type of cell in the body means that the cell has pluripotency (King, 2003).

In 2000 the National Institute of Health (NIH) moved forward in trying to get federal funding for stem cell research, and President Bill Clinton agreed with the movement because of the potential of stem cells (Godoy, Novey & Palca, 2007). However, as soon as President George W. Bush came into office he “puts a hold on federal funds” (p. 1) because of how much controversy there is over the subject of embryonic stem cell research. In July of 2001 Senator Bill Frist and Senator Orrin Hatch wanted there to be use of federal funds for stem cell research, which caused President George W. Bush to allow funding for a few dozen stem cell lines. Despite urges for ease of restrictions on stem cell legislation, President Bush vetoed all bills that tried to ease the regulations on embryonic stem cell research. President Bush had to hold to his statement of being ethically responsible and wary of the controversy over morals (National Institute of Health, 2009). States such as California and New Jersey decided to provide their own funding for stem cell research because they believe research can lead to a betterment of human kind (Godoy, Novey & Palca 2007). When President Obama came into office, he made Executive order 13505, which allows more stem cell lines to be opened (United States Government, 2009).

Current Situation

President Obama signed the Executive order on March 9, 2009 and the order was to take effect on July 7, 2009 (United States Government, 2009). “The Executive Order states that the

Secretary of Health and Human Services, through the Director of NIH, may support and conduct responsible, scientifically worthy human stem cell research, including human embryonic stem cell (hESC) research, to the extent permitted by law” (Kington, 2009). Before this order there was only minimal research able to be conducted on research and federal money was very hard to come by in support of stem cell research. Before the executive order, there were 21 approved stem cell lines. There are currently forty-three stem cell lines that are approved for NIH funded research (National Institute of Health, 2009). This policy opened the doors for research to be more easily attainable through the National Institute of Health (NIH).

Upon signing the Executive Order, Obama also signed legislation that “bans federal funding of any research that leads to the destruction of human embryos” (p. 14). The legislation signed was the Dickey-Wicker Provision Amendment that states researchers can’t make their own stem cell lines or kill embryos. In essence, the Executive Order didn’t change the course of stem cell research in any dramatic way because embryonic stem cell research still can’t have the full access to embryonic stem cells they wish to have. In essence, access to stem cell lines is more readily available to researchers because more are being approved, but they still have to abide by the Dickey-Wicker Provision. Experimentation on Human embryos is still extremely restricted (Fox News, 2009). Researchers are still restricted The Food and Drug Administration controls much of the regulation and restriction to what stem cell researchers can and can’t do (Halme & Kessler, 2006).

Because of federal government regulations and requirements, states are beginning to take the initiative and supply their own funding for stem cell research. In California for example, the California Institute for Regenerative Medicine funded \$32.5 million to the City of Hope for the use of stem cell research. Dr. Aboody was one of the first scientists to discover neural stem cells

and he is going to be heading the department dealing with treating cancer patients at the City of Hope. They are going to use the funding to help research how cancer and HIV could potentially be cured through the use of stem cells. It is impossible to remove all of the cancer from a patient in surgery without taking out good tissue in the process. Stem cells would be used to help solve this problem by injecting them into the cancerous area and combine it with a drug to produce a chemotherapeutic treatment that kills off all of the cancer cells (Lee, 2009).

The possibility of stem cells curing many diseases entices those who are suffering from a fatal condition. Eight-year-old Sierra Factor is suffering from Spinal Muscular Atrophy and because the needed treatment is illegal in the United States, Sierra and her family are going to receive treatment in China. China claims to have had many success stories with their therapies; however they wouldn't release any of their medical records or information. People such as Burton Feinerman also perform stem cell injections outside of the United States where it is legal. However, the International Society of Stem Cell Researchers and the FDA are against Americans going out of the country to receive such treatments because these therapies haven't yet met the standards of the FDA (Griffin & Fitzpatrick, 2009).

Differing Viewpoints

Embryonic stem cell research is a hotly debated topic among those in the science world. The entire debate is over whether it is ethical to use embryos created in the lab for research (Guenin, 2005). Scientists believe that through stem cell research, many diseases can be cured and disabilities can be conquered (Guenin, 2005). Stem cells that can become any part of the body (pluripotent) are only found in embryonic stem cells. In order to get the pluripotent stem cells, the stem cells are taken only a few days after the embryo has been cultured (National Institute of Health, 2009).

The director of the National Institute of Health (NIH) believes that research should go forth and that “good ethics is good science” (Klose, 2007). In 2007 Dr. Elias Zerhouni states in an interview with Christopher Klose, “we must continue the research at all levels, or there will be no progress” (p. 28). The potential for stem cell research is from curing diabetes to paralysis and this potential gives people reason to explore more fully embryonic stem cell research (Anton-Lewis, 2001). Because of this potential, the NIH believes federal funding is necessary (National Institute of Health, 2009). Those that want embryonic stem cell research to move further forward claim that the embryos will be destroyed and that they might as well be used for research (Keeler, 2005). Dr. Richard Hynes said in 2000 “[We] believe it would be immoral not to pursue embryonic stem cell research... because this research has such enormous potential to save human lives and to mitigate human suffering...” (Anton-Lewis, 2001).

The United States Catholic Bishop’s committee is extremely against the use of embryos for scientific research. They claim that it is destroying a life that has the potential to become a grown human being (Anton-Lewis, 2005). A Cardinal from the Catholic Church states, “Government has no business forcing taxpayers to subsidize the destruction of innocent human life” (Keeler, 2009). Those that do not support stem cell research are actively fighting for the use of other ways of getting stem cells, such as the umbilical cord (Keeler, 2009). They believe that there are better ways to cure the diseases and solve the medical problems facing the world today without the use of human embryos (Keeler, 2009). William H. Keeler states in 2009, “The ‘promise’ of embryonic stem cell research has been exaggerated.”

Both views have the similarity that they believe stem cells can provide relief of various diseases and cure illnesses. They also agree that funding is necessary for research to go forth. However, they differ in the procedure research moves forward. Some believe they should use human embryos for research because of the diversity of embryonic stem cells and others believe in further researching adult stem cells.

Public opinion has favored stem cell research as of 2004. Every year except for 2002 the percentage of people that favor stem cell research has been more than those who oppose it (National Science Foundation, 2006).

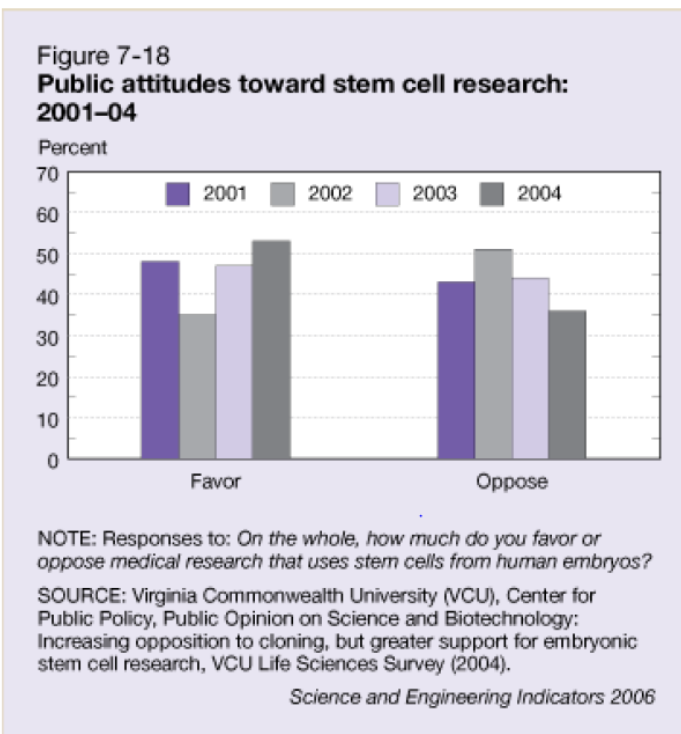


Figure 1. Bar graph showing public attitudes toward stem cell research: 2001-04. From “Public attitudes towards stem cell research,” 2006, National Science Foundation.

Policy Recommendation

The idea of expanding stem cell research without killing embryos is one that offers much promise without the political controversy. President Obama issued Executive Order 13505 so that stem cell research could be broadened, but also has set up legislation so that embryos cannot be cloned or killed (Fox News, 2009). The solution offered through this policy is what the country needs and offers the most benefits. By expanding the federal funding it opens more possibilities for obtaining stem cells through other sources such as the umbilical cord (King, 2003). In this way stem cell research can go forward without aggravating those who are opposed to embryonic stem cell research.

The legislation to allow federal funding for embryonic research that doesn't destroy embryos is already in place and is in existence by Executive Order 13505 and by the Dickey-Wicker Provision amendment. The Dickey-Wicker Provision is what keeps researchers from making their own stem cell lines (Fox News, 2009). President Obama said in an interview with Fox News in 2009 that the policy is set up so that it "never opens the door to the use of cloning for human reproduction." Such cloning, he said, "is dangerous, profoundly wrong, and has no place in our society or any society." President Obama will keep embryonic stem cell research from becoming inhumane and makes having stem cell research without killing embryos politically feasible.

The possibility of curing a variety of diseases and disabilities offers great economic viability in the future. Not only would increasing stem cell research be economically feasible, but it would offer economic benefits. With the ability to cure various ailments costs of healthcare would decrease in the long run. While a great deal of money will be required to obtain the

research and knowledge required to solve some of the world's greatest feats, in the end the investment of time and money will be worth every penny.

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