The Fight Against Stem Cell Research

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"I not only think that we will tamper with Mother Nature. I think Mother wants us to."[1] The 1997 movie, *Gattaca*, starts out with the above quote from Williare Gaylin. Gattaca presents a future that is controlled by science and technology, a future containing children who can be genetically modified at birth to be perfect and a future promoting genetic discrimination in which a person's value can be determined by a mere DNA sample. This controversial future is not far off as issues like stem cell research arise. The ethnical issues that come along with researching stem cells must be addressed now.

In order to confront the ethical issues involved with the complex science of stem cells, important information about stem cells must first be revealed. Simply, stem cells are "cell[s] with the potential to develop into one of several types of differentiated cells."[2] There are many different kinds of stem cells but one of the most controversial ones are embryonic stem cells. Embryonic stem cells are pluripotent cells, which are often derived from eggs fertilized in a woman's body or "an egg fertilized in an IVF (in vitro fertilization) clinic."[3] A pluripotent cell can be used to make any type of cell, can be self-renewed, and maintained in labs for a very long time. Scientists have high hopes for embryonic stem cells and believe that in the future, they can be used to cure long-term diseases such as cancer. Stem cells can also be used to develop regenerative medicine by introducing new cells through stem cell transplants to help the body recover faster from illnesses. However, pluripotent cells have the tendency to duplicate themselves. Exponential duplication of cells in the body would cause a build of cells in the patient's body, creating a tumor.

On the other hand, embryonic germ cells are derived from fetuses and are probably the most controversial since a fetus would need to be destroyed in order to

obtain the embryonic germ cells. However, embryonic stem cells are highly effective as they do not constantly duplicate themselves, unlike pluripotent cells, and thus, embryonic cells will potentially be the most effective in transplants and therapy. [4]

Yet adult stem cells are less controversial. As the name implies, these stem cells are not derived from fetuses or newly developed organisms but instead, are found in bone marrow and blood cells.[5] Currently, bone marrow transfusions are used in treating diseases like leukemia because the stem cells in bone marrow aid in the production of new, healthy blood cells.[6] Deriving stem cells from a newborn baby's umbilical cord is also quite popular. The baby's umbilical cord can be preserved so if the baby needs a transfusion of stem cells in the future, the baby's own stem cells would be available.[7] The stems cells again could potentially treat many blood disorders and immune system problems.

In general, stem cells seem very promising to scientists. Most obviously, scientists hope that stem cells can replace damaged tissues as in the case of blood cells, but stem cells are still very useful even in the preliminary form of research. Scientists believe that stem cell research can ultimately reveal how cancer starts in cells and eventually, reveal cures for cancer. Scientists also want to use stem cells to test new drugs instead of using animals. Using stem cells would appease those who are concerned about animal rights, and using stem cells would be cheaper than using animals. Stem cells would also be able to reflect human tissue reactions to a new drug better than the animals' reactions. In addition, stem cells "may be useful for screening potential toxins in substances such as pesticides before they are used in the environment,"[8] and stem cells can test gene therapy methods to cure people with genetic disorders.

However, like in most new medical advances, both scientific and ethical problems appear. Introducing new cells in a body automatically triggers the immune system to attack the new foreign cells. The immune system would destroy the stem cells before they could benefit the body. Scientists have figured out that if they switched the nucleus of the egg cell with the nucleus of the patient's cell, the immune system would not suppress the cells, since it recognizes the stem cells as part of the body's own cells. However, much controversy has emerged because some people dislike the fact that scientists are creating embryos for the sole purpose of research. Also, embryos are "genetic clones of the patient"[9] and theoretically, taking an embryo could possibly be used to make a clone of a human. There are some "solutions" to stem cell transfers but none of them are ideal. Scientists could extract adult stem cells and since the cells are directly from the patient, the body would not reject the cells. However, adult stem cells are limited in that they cannot turn into as many different cell types as embryonic stem cells and embryonic germs cells. Another option is to try and "reactivate the thymus gland [that deactivates at birth and no longer accepts new cells, which would accept] foreign transplanted tissue."[10] Reactivating the thymus gland is still in the research stage though.

The government has tried to find ways to appease both the liberals, who tend to condone stem cell research, and the conservatives, who tend to think embryonic stem cell research is unethical. President Bush is aware of the growing concerns with stem cell research, that scientists want federal funding to support stem cell research,[11] and that a vast number of Americans are in favor of tax money being used for stem cell research.[12] However, President Bush himself does not condone embryonic stem cell research

because in the future, embryonic stem cell research could hypothetically be used to clone human beings. Bush believes that "human life is a sacred gift from our Creator [and that he himself has] an important obligation to foster and encourage respect for life in America."[13] He does not want to create embryos for the sole purpose of research, but he will "allow federal funds to be used for research on [] existing stem cell lines."[14] He also believes that adult stem cells and umbilical stem cells will have much potential in scientific progress and thus, the government spent $250 million on researching non embryonic stem cells in 2001. He also "name[d] a President's council to monitor stem cell research"[15] to make sure he is constantly updated with the issues involving stem cell research. However, in 2005, the House of Representatives tried to override Bush's veto on a bill for funding embryonic stem cell research. The House did not gather enough votes to override the veto but then passed a proposal "that would use federal money to study stem cells taken from adults and umbilical cord blood, instead of human embryos."[16] The legislative branch seems to be in support of stem cell research but as long Bush is president, the ethical issues in stem cell research will be considered. He has been diligent in defending his own morals, which just so happen to coincide with mine. Nevertheless, with the coming election of 2008, the new candidates might not be as conservative as Bush in the area of stem cell research. To prepare for this change in leadership, Bush should have tried to appease stem cell advocates further by either compromising or further explaining his views on stem cell research.

Due to our democratic government, the "people's voice" is very important in making federal decisions. To facilitate morality in stem cell research, we can raise community awareness. Incorporating information about stem cells in public education

would result in people having more information about stem cell research and thus, enabling them to have educated opinions about decisions involving stem cells. Most schools, especially in California, take the liberal stance on stem cell research, in which the school administration condones the use of stem cells. Instead of presenting students with biased information, the school board can work on providing neutral information so students can draw their own conclusions.

At the same time, panel discussions can be added to the new school curriculum. Panel discussions offer a comfortable and interactive environment in which students are able to ask questions or express concerns about stem cell research. A panel that consists of experts on stem cells will provide a broad range of information so students can be more educated. By being informed about stem cell research, students can write to their government representatives and express their opinions regarding stem cell research. From personal experience, government officials are eager to see youth involvement in political issues and are very encouraging. However, many youth are apathetic about involvement in government because they do not realize that the decisions made presently regarding stem cell research, will mostly affect their lives in the future. Through education and encouragement, youth will be less reluctant to join in the political debate involving the morality of stem cell research.

Although many organizations are fighting for the “charity dollar,” fundraising for alternative methods for curing diseases will also get the community involved. We can start a foundation specifically for raising money that is sponsored by big companies so there will always be a flow of money to support the foundation. On a more individual level, students can alert their school fundraising club to the needs of alternate methods

instead of stem cell research. Together with the fundraising club or just by themselves with a group of fellow students, students can organize bake sales or T-shirt sales to both raise money and community awareness. Baking and selling T-shirts is easy and can be done in a short amount of time so youth and adults alike will be able to get involved.

Ultimately, the battle against destroying a life for stem cell research will be a long and hard. Although compromising to an extent is important, it is even more important to stay firmly rooted in morality in our changing society. As Margaret Mead said, "Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has."[17] In the fight against stem cell research, it is important not to be discouraged with the impending obstacles. Being informed is a good first step towards implementing change, and individuals can definitely influence government decisions in stem cell research.

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