Master cells of the human body

Health & Medicine

Two of humanity’s main priorities are at stake: protecting life and curing disease. Embryonic stem cells are the solution to the many unanswered questions surrounding these priorities. Many people question why scientists cannot simply use adult stem cells for their research instead of using embryonic stem cells.

Adult stem cells have been researched for a much longer period of time and some treatments have successfully been developed from them. There are a couple of major constraints on the use of adult stem cells. They have proven to be very difficult to work with, one of the main issues being they are difficult to keep alive in the lab (Clemmit 703). The second constriction to using adult stem cells is that they are not pluripotent, or are unable to “ replicate indefinitely…and…differentiate into cells representative of all three germ layers” (Singer 1). Adult stem cells are clearly not as useful as are embryonic stem cells. There is no doubt in anyone’s mind that it is unethical to purposely abort a child strictly for research purposes. However, once a child has been naturally aborted, aborted by choice of the mother due to other extraneous factors, or is simply lying in a pitri dish at a fertilization clinic, the precious tissue will otherwise go to waste.

According to studies, “ about 16, 000 embryos are created in clinics each year, the majority of which are deemed unsuitable to transplantation in the mothers’ wombs” (Bettelheim 1067). There are estimated to be some 400, 000 unused embryos in fertilization clinics, of which 8, 000-10, 000 will be simply discarded yearly (Clemmit 699). This waste of potentially life-saving stem cells is clearly unnecessary. At what stage of development should we consider an embryo a person with the same rights we receive? This long

discussed concept is still in question today, with what seems to be no hope for consensus in sight for the near future. There are, however, some inevitable truths that we can find through research done on embryonic stem cells. Further advancing embryonic stem cell research will benefit humankind by providing crucial information on the beginning stages of life, allow scientists to watch how diseases that thousands of Americans suffer from yearly evolve and help find potential cures, and replace damaged tissues caused from unfortunate physical injuries. Some may argue that taking the life of an embryo is murder, as that embryo should have the same rights as those of an adult.

It is argued, “ Embryos should be protected because they are ‘ that which we all once were’” (Clemmit 701). Many anti-abortionactivists fear that advances in stem cell research will cause more women to look to abortion in order to receive compensation for their fetus. This argument goes as far to say that some women may intentionally conceive to receivemoney, therefore causing a “ multimillion-dollar fetal harvesting industry” (Jost 1). What these activists fail to see is that “ there is a significant difference between an embryo suspended in liquid nitrogen that will never be implanted inside a womb, and an unborn child who is already in the womb” (Bettelheim 1071). These cells will not go through the developmental stages required to grow into a fetus. Embryos are composed of the most basic part of life, simple cells that will eventually develop into much more complex tissues. At this stage, they are a cluster of about 150 cells called a blastocyt (Clemmit 699).

Scientists will be able to research these blastocyts at their most simple stage of production, before each cell begins its amazing transformation into bone,

blood, hair, brain, etc tissues. Being able to research this process, scientists will be able to discover more about what occurs inside the womb during the initial stages of growth. With the amount of birth defects in children born today, this information will prove to be highly beneficial. Today, “ 3 out of every 100 babies born in the United States have some kind of major birth defect” (Nicholson 1). These defects are sometimes hereditary; however, sometimes the reasons they occur are unknown. Scientists may be able to pinpoint precisely when these mutations occur in the tissue that cause defects such as tay sachs disease, down syndrome, and many others. The simple use of embryonic stem cells may greatly improve the quality of life for these unlucky newborn babies.

Studying stem cells “ offers a glimpse at human life in its simplest form… before they develop rudimentary nervous systems and are capable of achieving something resembling awareness” (Bettelheim 1067). The possible use of gene therapy to fix the chemical imbalances in our DNA that cause genetic disorders and some types of behaviors may be one of the greatest outcomes of continued and more aggressive research of embryonic stem cells. The evolution of many diseases that our population faces today may also be further understood by stem cell research. Scientists will be able to see a “’disease in a dish’, where degenerating cells themselves could be observed and treatments tested as a condition…develops” (Clemmit 700). For scientists, being about to observe the degeneration of cells into the said disease may help answer several questions as to why they occur. As of yet, there is still not a known cause as to why some people develop Parkinson’s disease. There are a few genetic linkages through the patients currently

living with the disease; however, the majority of these cases occur sporadically and without any connection to one another.

If scientists are able to watch this disease in the making, they may be able to learn more about what goes wrong to cause the degenerating of cells; therefore allowing them to more effectively produce potential cures. This is true for several other diseases that similarly have no known cause or cure. The amazing ability to test potential cures on those diseases without using humans for clinical trials will also prove to be highly beneficial. Embryonic stem cells will allow scientists, " to explore stem cell cultures of cells that bear the genetic stamp of certain diseases…to test potential new treatments" (Clemmit 708). These pre-disposed cells will give researchers a large sample group of the disease in question and allow them to test many potential cures at the same time, being able to see the effects of multiple possibilities in comparison with one another. Additionally, there are several diseases that now have hope for a cure due to stem cells, as these precious cells are able to replicate endlessly and can be grown into specific body parts (Bettelheim 1067). For those who have relatives that are currently suffering from diseases such as Parkinson's ordiabetes, this is the answer to a long-time question.

Today, there are more than one million Americans alone living with Parkinson's disease. According to research, embryonic stem cells are able to be grown into different body parts, allowing them to potentially replace cells that are no longer able to repair themselves. For those who suffer with the eventually life ending symptoms associated with Parkinson's disease such as compulsive shaking and the loss of muscle use, the idea of living a normal

life again if a far-reaching dream that now has a future in sight. Either to help discover why these diseases occur or to help in replacing the degenerated cells, embryonic stem cells will provide much needed information on many incurable diseases that so many suffer from today. Several people suffer through life with outcomes of disability due to a serious physical injury form a onetime occurrence. Many of these people are now unable to walk, talk, or move due to injury of their spinal cord, brain, or any other nervous system organs. Disabling injuries of this magnitude impact millions of people on a day to day basis.

One of the extreme cases that have been highly publicized is the story of Christopher Reeves. Being a perfectly healthy jockey one day, his tragic fall from his horse left him a paraplegic and stuck in a wheelchair for the rest of his life. These types of injuries will benefit greatly from embryonic stem cells. As previously stated, embryonic stem cells are able to replicate endlessly and have been proven to be able to grow into any type of body part (Bettelheim 1067). There is still work to be done on these cells in order to cause them to " commit" into growing into a specific type of organ; however, with the proper funding for research, these cells will be able to replace damaged or destroyed cells in the body. Presently, scientists " have watched with amazement as some of the cells spontaneously evolve into tiny bundles of beating heart muscle, clumps of nerves, or even hair and teeth" (Bettelheim, 1067). These discoveries have been made even with the little amount of research that has been able to be performed over the past 20 years.

The extent to how much more these cells will be able to do for our bodies seem limitless from what has been discovered about them already. One of the greatest benefits of human stem cells is their acceptance from our bodies and immune systems. These cells are not rejected as they are able to take on the DNA of the recipient. Ideally, scientists will be able to take cells from the recipient and combine them with donor eggs, creating beginning stage embryos (Bettelheim 1073). By doing this, the recipient of the stem cells will have a perfect match to their own DNA, making rejection impossible for the body. Allowing these cells to combine and grow, scientists will be able to replace the broken parts of the body with newer and healthier parts. The rejection of the donor organ is the main cause offailurefor present day organ transplants.

As we have seen, these transplants have saved many lives that can be saved by simple embryonic stem cells being produced into perfectly matched organs and tissues. With the ability of embryonic stem cells to replace and regenerate damaged or dead cells, the quality of life will be greatly improved for many people suffering from ailments due to physical injuries. The answer to the question of human life or curing disease is clear. With breakthroughs in research on embryonic stem cells we can have both. It was stated at a NIH hearing that “ a civilized society will appreciate the possibilities opened up by research, but will insist that scientific progress must not come at the expense of human dignity” (Bettelheim 1068). This statement clearly shows that we must not compromise ourselves in order to further advancescience. The embryonic stem cells currently being used to do research are either donated tissues form women who choose to abort their pregnancies or still

born babies, or come from fertilization clinics where the embryos are donated by the couples who created them since they will no longer be used.

The research on embryonic stem cells is not compromising our morale since the sources of this research would otherwise be discarded as waste. The benefits of embryonic stem cell research are proven to be highly beneficial on many levels for humanity. Works Cited Bettelheim, Adreil. “ Embryo Research. CQ Researcher. 9. 47 (1999).

CQ Researcher. Auraria Library. Web. 20 July. 2010. Clemmit, Marcia. “ Stem Cell Research.

” CQ Researcher. 16. 30 (2006). CQ Researcher. Auraria Library. Web. 20 July.

2010. Jost, Kenneth. “ Fetal Tissue Research: Should We Permit Research on Fetal Tissue Transplants? ”. CQ Researcher. 1 (1991). CQ Researcher. Auraria Library.

Web. 20 July. 2010. Nicholson, Linda. KidsHealth. KidsHealth. com.

Oct. 2010. Web. 20 July, 2010. Singer, Matthew A. Stem Cell Research and Therapeutics. California: Springer Science and Business Media B.

V. , 2008. Web.