Student

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English 301

15 June 2010

Annotated Bibliography

The Center for Bioethics and Human Dignity. "Human Stem Cell Research Is Unethical." *Current Controversies: Ethics*. Ed. Brenda Stalcup. Sand Diego: Greenhaven Press, 2000.

Opposing Viewpoints Resource Center. Gale. Washington State. 8 June 2010. Web.

This was my strongest source against embryonic stem cell research. The author of, "Human Stem Cell Research Is Unethical" was the Center for Bioethics and Human Dignity, located in Bannockburn, Illinois. The main objective for the Center for Bioethics and Human Dignity is to study and address current bioethical issues facing modern society. The perspective is from a consensus of the center on the ethics of embryonic stem cell research.

The article explains how embryonic stem cell research is unethical in a scientific, universal way. Religiously controversial, obtaining embryonic stem cells destroys embryos. This essay shows how unethical stem cell research is apart from a religious argument. The article also expands on how stem cell research violates existing laws, making it both unethical and illegal. After establishing such claims, the article defends legal precedents and how current law protects an embryo from research, and how the benefits are not guaranteed. The state has an obligation to protect vulnerable individuals from being experimented on. The article gives alternative methods to using embryonic stem cells such as stem cells from bone marrow, and how the continuing development on research on adult stem cell suffices the need for stem cells.

The argument being made is strong, because it effectively tackles all of the ethical concerns for stem cell research. The Center for Bioethics and Human Dignity jump into the issue that it is unethical because embryos rights are violated and what can eventually become a human being is being "killed". The article clarifies the 'How', 'Why', 'When', and 'What' of the argument in a clear constructive way. The article was weak to mention the argument that some scientists believe that there is a "pre-embryo" phase in which embryonic stem cells can be obtained. The controversial idea of when life begins is the foundation behind the debate of the stem cell research argument. Where this perspective believes that life starts at conception, the opposing side believes there is a period of time before the embryo is a human being. The credibility of this source is strong because the essay was found on the WSU library collection. This essay is a collection of essays in the opposing viewpoints series that are derived from authentic sources similar to the Center for Bioethics and Human Dignity.

This source contributed the strongest counterargument to my paper. I used a little bit of everything from this article to have a strong counterargument against my main claim. It

strengthens my paper if I have a solid counterargument, but a clear backed claim with an even stronger counterargument. A very important section that I used in my paper was how they claimed that there is no "pre-embryo" phase and that it is unethical at anytime to experiment and cause the destruction of an embryo, "If it is objected that, at five days or fifteen days, the embryo does not look like a human being, it must be pointed out that this is precisely what a human being looks like—and what each of us looked like—at five or fifteen days of development" (Center for Bioethics, par. 11).

"Embryonic Stem Cell Research Is Not a Moral Dilemma." *At Issue: Embryonic and Adult Stem Cells.* Margaret Haerens. Detroit: Greenhaven Press, 2009. Opposing Viewpoints Resource Center. Gale. Washington State. 8 June 2010. Web.

Michael Kinsley wrote this essay originally for the online newspaper *Slate*. The main objective of this source was to provide information on where the majority of embryos come from in medical research. This was in favor of stem cell research and Kinsley himself was diagnosed with Parkinson's.

This was a strong source in favor of stem cell research because all sources that are against using embryos for stem cell research argued that it was a potential life. Kinsely argued that this should not even be a moral issue because embryos that are used for stem cell research come mainly from fertility clinics. Fertility clinics have to produce more embryos than they can use in order to help provide the highest possibility of helping people have babies. Kinsely's argument is that these unused embryos get flushed away anyway and that they are what scientists use to experiment for stem cells. He also makes the claim that if you truly believe that embryos are individuals killing embryos just because they would have died anyway does not make it morally acceptable. His claim is that an embryo that is only a few days old does not constitute a human being with equal rights as an individual. If people really believed that the destroying of the embryos were murder, then fertility clinics cause more of a morality issue than stem cell research.

This source was successful in providing a reason for justifying embryonic stem cell research. The method of obtaining embryos is not a random woman who wants an abortion. What is weak in the argument is how having Parkinson's may affect his viewpoint and made him a biased reporter. He never addresses the time when it is acceptable for an embryo to have the right to protection. If a few-days-old is acceptable for experimentation, when is it not? The credibility behind this source is Michael Kinsley, a political journalist and pundit, and also the editor of the online newsmagazine *Slate*.

This source contributes to my research paper because I included his argument about fertility clinics. It justifies the use of unwanted, overproduced embryos that are not going to have the opportunity to fully develop in any natural situation. Embryos donated from fertility clinic eradicates the burden of scientists who were otherwise be experimenting with embryos obtained in a less professional manner such as aborted fetuses. The possibility for scientific benefits is too great and too open-ended for the unwanted embryos to go to waste.

George, Robert P, and Christopher Tollefsen. Embryo: A Defense of Human Life. New York:

Doubleday, 2008. Print.

Embryo is a book written entirely as a means of persuasion against embryonic stem cell research. The main objective of this book was to provide support that the embryo is a human being and that any research that involves the destruction of one is murder, and therefore unethical.

Robert George and Christopher Tollefsen write about what is at stake in the embryo experimentation debate. They claim that embryos are human and will always be human, and no amount of debate will change that. The argument is how early it is acceptable to be performing experimentation on a human embryo. George and Tollefsen argue that it is unethical at all times and that no vulnerable portion of society should be sacrifice for the betterment of the majority. They also go over the facts of embryology by providing information on the development of cells and how embryonic cell are gathered. When embryonic cells are gathered, during the process the embryo is destroyed. This is why so much controversy surrounds embryonic stem cell research. George and Tollesfsen also expand on moral philosophy and how that connects to the early human being. Their claim is that murder is seen as universally wrong and that this constitutes as murder. They made a strong argument, but an opposing viewpoint would disagree that the pre-embryo is a human being. At such an early stage in development, the embryo is just a mass of cells that does not necessary dictate a human being. It is too early in the stage to determine what exactly those cells would develop into, such as an umbilical cord or whether life would have managed to sustain itself. The credibility of the authors is that they are established professional writers. In addition to writing *Embryo: A Defense of Human Life*, Robert George also wrote *In Defense of Natural Law*, while Christopher Tollefsen wrote *Biomedical Research and Beyond*.

I used this source to provide more solid information for a counterargument and ways in which I could argue against claims being made in this book. When I began my research I needed to have a basic understanding of what arguments were being made on both sides in order to develop my own argument in favor of embryonic stem cell research. This source was useful, because I thought that they main counterargument would be based on a ambiguous religious text that could not be universally applied, however, although worldly religious beliefs are mentions, it takes an approach that deviates from religious morality and focuses on a scientific morality.

Greer, Erik V., *Focus on Stem Cell Research*. New York: Nova Biomedical Books, 2004. Print

This is a very scientific, complicated book by Erik Greer. He had many contributions and a lot of editors were involved in publishing this book. The contents of his book is for a more advanced, medical audience that went so far in depth in stem cell researching as to explain how certain agents are affected by different types of research. Greer wrote about how scientists use iron oxide MR contrast agents for monitoring stem cell therapy, and how multi-dimensional stem cells can be applied in cell therapy. He discusses bioaminergic neuronal stem cells and how they are used to investigate prion protein function. He discusses specific cells in which are

researched on, such as the analysis of endogenous cell cycle proteins and signal transduction in hematopoietic stem cells. I did not use this source because I could not comprehend the text. For a more detailed research project I would need a better understanding of how cells can be manipulated and how research affects them. The text itself was not targeted for a person such as myself, but an extension of research for a more professional audience. The weakness in Greer's argument is that not everyone will be able to understand what he is referring to, or what point he is making. I would use this source after studying more science and in a paper focusing on stem cells specifically and not the controversy behind it. I did not use this source in my research at all, because I did not expand on experimentation of stem cells, but the ethical dilemma.

Jean Peduzzi-Nelson. "Adult Stem Cells Are More Promising than Embryonic Stem Cells."

Opposing Viewpoints: Stem Cells. Ed. Jacqueline Lanwith. Detroit: Greenhaven Press,

2007. Opposing Viewpoints Resource Center. Gale. Washington State. 7 June 2010.

Jean Peduzzi-Nelson defends the use of adult stem cells over embryonic. She is a professor in the Department of Anatomy and Cell Biology at the Wayne State University School of Medicine in Detroit. Her argument is focused on comparing the results between testing on embryonic stem cells and adult stem cells. Nothing in her argument suggests that she believes an embryo is a human being, but she still remains adamant that embryonic stem cell research is overrated and less advantageous than adult stem cells. An effective way that Peduzzi-Nelson relays her argument is how she compares the success in adult stem cells with the failure of embryonic stem cells in the same area. Diseases that she summarizes are Parkinson's, diabetes, spinal cord injury, and heart disease. She claims that adult stem cells are the better choice because, "In an animal model of Parkinson's disease, rats injected with embryonic stem cells showed a slight benefit in about 50% of the rats, but 1/5th of the rats died of brain tumors caused by the embryonic stem cells" (Peduzzi-Nelson, Par. 7). Her point is the "rapid proliferation of embryonic stem cells" is not necessarily a good thing, such as in cancers and tumors. If embryonic stem cells are not producing the potential results that scientists claim, yet adult stem cells are, Peduzzi-Nelson makes a strong, scientifically supported claim. The weak point of her argument is citing the exact studies that are showing adult stem cell success and embryonic stem cells a failure. How many other studies have been done to prove or disprove this claim? Another important claim that she makes is that scientist who praise the possibility of embryonic cells are scientists that hold key patents or are supported by biotech companies pursuing embryonic cells commercially. This would compromise the integrity of medical research, and Peduzzi-Nelson did not support the claim.

This is a balanced source for the controversial topic, because the ultimate goal in using embryonic stem cells is to advance and benefit society. Peduzzi-Nelson is not claiming that stem cell research is unethical, but results can be utilized in a better way. This source has not yet been used in my paper, but will go towards the end in the "alternative sources of stem cells" paragraph. If adult stem cells are successfully doing what scientists believed embryonic stem cells could do, then it eliminates the need for controversy.

National Research Council and Institute of Medicine of the National Academic. *Guidelines for Human Embryonic Stem Cell Research.* Washington, D.C.: The National Academies Press, 2005. Print.

This is one of my strongest sources advocating embryonic stem cell research. The book is written by the National Research Council and Institute of Medicine. All the people involved in writing this book are the Committee on Guidelines for Human Embryonic Stem Cell Research, Board on Life Sciences Division on Earth and Life studies, and the Board on Health Sciences Policy Institute of Medicine. This source gave a solid introduction into the world of stem cell research. It provided evidence for the scientific background of human embryonic stem cell research, ethical and scientific controversy of oversight, current regulation, information on donors of stem cells, and the National Academics Guideline for Research on Human Embryonic Stem Cells. The source provided a way for a very scientific, controversial issue to be understood by someone who does not major in bioethics. The detail of the procedure in using stem cells is important because there lays the controversy behind the research. It is a strong source because it is purely scientific and is a compilation of bright credible authors that offer no immediate outward bias. In the source, both sides of the ethical controversy are stated.

In my research paper I used this as a source behind the science of embryonic stem cell testing. In order to understand the issues, the audience needed to understand the basics of what a stem cell is and how it is manipulated during research.

Nolta, Jan A., *Genetic Engineering of Mesenchymal Stem Cells*. The Netherlands: Springer, 2006. Print.

Jan Nolta focuses primarily on genetically engineering mesenchymal stem cells. A mesenchymal stem cell is a fibroblast colony-forming cell, or a marrow stromal fibroblast. These cells are derived from the bone marrow and are used as an alternative source of stem cell from embryonic. Nolta explains how mesenchymal stem cells are engineered and how they are transplanted. Nolta is a very technically advanced book about the establishment and transduction of primary human stromal and mesenchymal stem cell monolayers. Nolta discusses how mesenchymal stem cells have different gene expression profiles, and how isolated and cultured murine mesenchymal stems cells can be used in in-vivo. The book is highly comprehensive and dense in focusing on a specific bone marrow stem cell. In order to use this book, further research needs to be done in order to understand it. As it is a book on stem cell research, the perspective is supportive of stem cell research. Embryonic stem cell research is not mentioned at all, as it is only on mesenchymal stem cells. It is a very strong source for mesenchymal stem cells, but loses its effectiveness in an audience not suited to its academic level.

I did not use this source as the majority of my research was specifically on embryonic stem cells. Before researching, I was not aware of how many methods and types of stem cells

were available. Mesenchymal stem cells are an alternative to embryonic stem cells, but I cannot use this source as I cannot fully comprehend Nolta's argument. I did not need a source this in debt on mesenchymal stem cells, but perhaps an overview of alternative sources to embryonic stem cell research.

Parekkadan, Biju and Martin L. Yarmush. *Methods in Bioengineering: Stem Cell Bioengineering*.

Boston: Artech House, 2009. Print.

Biju Parekkadan and Martin Yarmuch are both two experts in the field of stem cell bioengineering. I have found that a lot of my sources are too advanced for the academic level that I am writing on. I used a small section of this source, but very little. Parekkadan and Yarmuch are researching somatic cell nuclear transfer and embryonic stem cells. The data is focused on mouse parthenogenetic embryonic stem cells. The experiments are from a generation of mice that used embryonic stem cells are using tetraploid embryos as hosts. The book compares human neural stem cells to mouse neural stems cells. *Methods in Bioengineering: Stem Cell Bioengineering* report stem cell research on mice rather than humans and compare the effect.

I used the first chapter of this book purely as research which explains somatic cell nuclear transfer and embryonic stem cell research. I did not use exact quotes or any direct information. The book focuses on the procedure of experimentation, such as, the design, methods, and materials used. This is solely research and made no claims towards the controversy of the process of embryonic stem cell research. The perspective of the authors are stem cell bioengineers, so they support the research done on embryonic research, but do not directly confront the situation.

Phillips, Theresa. "Pros and Cons of Stem Cell Research". About.com: Biotech/Biomedical. June

7, 2010 <http://biotech.about.com/od/bioethics/i/issuestemcells_2.htm>.

Dr. Theresa Phillips is a Biotech/Biomedical scientist that holds a background in biotechnology and biomedical research. She has worked in the environmental remediation industry in a couple of small biotech companies. Her perspective is to give the pros and cons of the argument. Her article was about what was happening recently in terms of legality and support for stem cell research. In 2006, President Bush vetoed a bill passed by the Senate on expanding federal funding for embryonic stem cell research. As of now, federal funding can only go to research on embryos that are already dead, or destroyed embryos. Phillips also compares other countries with standing stem cell laws, "In Canada, as of 2002, scientists cannot create or clone embryos for research but must used existing embryos discarded by couples. The UK allows embryonic stem cell cloning" (Phillips, Par. 5). In 2009, Obama approved embryonic stem cell research funding, overturning Bush's ruling.

This article gives a timeline of how the acceptability of stem cell research has progressed. Although there still are restrictions to federal funding, embryonic stem cell research has evolved. I have not yet used this source, but will definitely be used as far as the United States

and embryonic stem cell research legality. The weak points in her argument would be that she does not explain how far federal funding limits are, or what affect the bill had on stem cell research by passing. As far as credibility, the author has a qualified position, but the source was found on the web in About.Com. That weakens the argument and why I have not used the source yet.

Singer, Peter. "Research Using Human Embryos Is Morally Acceptable." *At Issue: The Ethics of Abortion*. Jennifer A. Hurley. San Dieo: Greenhaven Press, 2001. Opposing Viewpoints Resource Center. Gale. Washington State. 7 June 2010.

Peter Singer is an ethics scholar and supporter of animal rights. He is also the author of Animal Liberation, Practical Ethics, How Are We to Live?, and Rethinking Life and Death. He is DeCamp Professor of Bioethics at the University Center for Human Values at Princeton University. His perspective is in favor of embryonic stem cell research to cure Leukemia and other illnesses. His claim is that people raise more objections to using a bunch of cells, or pre-embryonic state that has no brain or consciousness, than researching on rats that do feel pain and are developed animals. Singer voices the religious argument that embryos have immortal souls and that is the reasoning behind why greater protection is given to non-human animals. His claim is that if an embryo could feel pain, it would be unethical and morally repulsive, but an embryo contains 64 cells would not be able to already have a developed nervous system or brain.

I have not directly quoted this source, yet in my revision I will. He voices the religious view simply and clearly. The religious view is, if embryos have immortal souls, they deserve greater protection over nonhuman animals. However, "If people who hold these beliefs are successful in preventing research on embryo stem cells in the United States, they will merely have demonstrated the extent to which nonreligious citizens of the United States continue to be disadvantaged by the strength of religious belief in this country" (Singer, par. 8). The weakness in Singers argument is the lack of specific religion. He generalizes all religious people in one group and does not mention how they deviate from that group.

Snow, Nancy E., *Stem Cell Research: New Frontiers in Science and Ethics*. Notre Dame: University of Notre Dame Press, 2003. Print.

Nancy Snow divided up the embryonic stem cell research issue into two main sections: scientific and public policy perspectives and the ethical issues in stem cell research. The first section revolved around scientific aspects such as what stem cell research is and what that means to medical advancements. Snow's book is a neutral perspective that illuminates both sides of the ethical debate. She gives information on stem cell research and religious freedom as well as umbilical cord blood, stem cells, and bone marrow transplantation. She differentiates between embryonic stem cells and adult stem cells. In the second section of Snow's book, she

expands on the ethical issues in stem cell research and takes interest in specifically the Catholic perspective. She includes an article on social ethics as well as a paper on the defense of embryos. It was a strong source to help develop more knowledge on the subject of stem cells.

I needed more than one source in explaining the process of obtaining stem cells to strengthen my argument that embryonic stem cells can ethically be used in the name of science. I did not use the information about the Catholic perspective on stem cell research, because I did not want my paper to move in that direction. If I mentioned the Catholic perspective, then I would need to include other religious perspectives as well. My research paper was not meant for a comparison of beliefs, but as a way to learn about stem cells. I could go over and use more information in my paper about alternative methods of gathering stem cells, as well as more information on public policy.

Sullivan, Stephen, Chad Cowan, and Kevin Eggan. *Human Embryonic Stem Cells: The Practical Handbook.* West Sussex: John Wiley & Sons, Ltd, 2007. Print.

This source is by Stephen Sullivan, Chad Cowan, and Kevin Eggan. In summary Human Embryonic Stem Cells is on the science behind embryonic stem cells and not the controversy. The book is split into three main sections: Obtaining and culturing human embryonic stem cells, characterization of human embryonic stem cells, and manipulation of human embryonic stems cells. All the other sources have an ethical stance, but Embryonic Stem Cells is on what type of lab equipment is needed and the delicate procedure in extracting stem cells. In complete detail, it provides information on stem cell banks for research, production, and clinical use, and how they're used. It gives an accurate description on how temperamental stem cells are and how easily they can be affected my microorganisms and viruses. Before any research is done, stem cells need to be pure and authentic. There are also different protocols for thawing frozen human embryos and culturing those embryos. The mechanics behind stem cells is a complicated process that at all stages can have affect on the success of research.

This source was not directly used in my paper, but I used it for background in understanding cell development and the procedures that scientist went through in order to cultivate stem cells. It is important in understanding the process of embryonic stem cell research when there is so much controversy behind the idea of destroying an embryo. When reading the actual procedures, an embryo does not portray itself as a living human being, but as a bunch of cells. It dehumanizes an embryo when you read about blastocyst at 2-3 weeks. The reason why I did not go into the process with so much detail is that my paper focuses on the ethical controversy. It is easy to get lost in the technicality of research, but ultimately it was hard to follow. I have not studied bioethics to be able to say I am an expert, so the level of understanding was hard. My audience is my peer and professor, who do not necessarily need the exact details of stem cell research to understand my argument.

"Using Alternative Sources of Stem Cells Resolves Ethical Issues." *Opposing Viewpoints: Biomedical Ethics. Viqi* Wagner. Detroit: Greenhaven Press, 2008. Opposing Viewpoints Resource Center. Gale. Washington State. 8 June 2010.

The Domestic Policy Council wrote from an article that was in Viqi Wagner's Opposing Viewpoints about using alternative sources of stem cells. Some of the alternatives to destroying the embryo are: cell extraction from embryos that are already dead, biopsies of embryos that do not end up killing the embryo, cell extraction from alternative areas rather than the embryo, or using adult cells and reprogramming them to a flexible state, or cell extraction from amniotic fluid. In the article they emphasize on cell reprogramming and extracting stem cells from amniotic fluid.

This source contributed to my research by providing alternative sources for stem cell research rather than embryonic stem cells. With alternative methods available to achieve the result that is used in embryonic stem cell research, it alleviates the stress of unethical experimentation. I used this towards the conclusion of my paper as a means of wrapping up the discussion on stem cells. Every day, science develops more new groundbreaking ways to research the cells in our bodies. Ethics is an important way of curving the experimentation as to not get out of hand.

Wertz, Dorothy C. "Fetal Tissue Research Will Benefit Medical Science." *Current Controversies: The Abortion Controversy.* Ed. Lynette Knapp. San Diego: Greenhaven Press, 2001. Opposing Viewpoints Resource Center

Dorothy Wertz is a social scientist and ethicist who coedits the Gene Letter which is an electronic newsletter that focuses on genetics, ethics, and public policy. Her claim is that fetal tissue is necessary for medical research because of the elasticity of embryonic stem cells. Wertz specifically focuses on the benefits of how ground-breaking embryonic research is and that millions of people can benefit from the advances in medical research. She discusses the ethical issues by claiming a three-day-old blastocyst is not yet an embryo. If it is not yet an embryo then there is no ethical concern. Any particular cell in the blastocyst is more likely to become part of the placenta, which is thrown out after birth anyway, rather than to become an actual person. Wertz also addresses the legal issues which, in January 1999, the Department of Health and Human Service ruled that embryonic stem cells do not fall under the 1995 Congressional ban on embryo research. The concept behind "pre-embryo" phase determines whether or not the research is ethical. The NIH is legally free to fund the initial derivation of cells from an embryo. Wertz also emphasizes the need for organs. Thousands of people will benefit from growing organs from human embryonic stem cells, yet now thousands die waiting for an organ transplant.

This source contributed to my paper by giving embryonic stem cell research a purpose. The push for advances in sciences becomes more important with given statistics on how many

people die waiting for organ donations. The ethical and legal issues of embryonic stem cell research are void, because in this perspective, there are not ethical or legal problems.

"What are the similarities and differences between embryonic and adult stem cells?", In *Stem Cell Information*. Bethesda, MD: National Institutes of Health, U.S. Department of Health and Human Services, 2009 http://stemcells.nih.gov/info/basics/basics5.

This article is written by the National Institutes of Health and the U.S. Department of Health and Human Services. The perspective is towards in favor of stem cell research because of where the U.S. Department of Health and Human Services stands. The difference between adult stem cells and embryonic stem cells is ultimately elasticity. Embryonic stem cells are more flexible, not yet solidified into a specific cell. Embryonic cells have the potential into growing into any possible cell in the human body. Adult stem cells are more limited in that their growth and can only become certain cells with specific purposes. Scientists have claimed that adult stem cells and embryonic stem have different chances of being rejected after a transplant, but that adult stem cells have a less likely change to being rejected. This is because the patient can have their own adult stem cells, so the body would recognize the cells, therefore raising the chance of accepting the transplantation.

What's weak in this article is how vague and shallow the argument is being made. It does not explain what can be done with stem cells that adult cells cannot, other than that adult cells are not as flexible. I have used this as more personal background to educate myself on the subject, but have not used it directly. I have other sources that are better suited to use because they have more detail, and explain more in depth. However the background still contributes to research because it backs other information that I have found on the embryonic stem cell controversy.