

Kathryn M. Gower

Stem Cell Research: Start the Funding

President George W. Bush established in 2001 a stem cell research policy that “promoted scientific progress while respecting ethical boundaries” (“Advancing” 4). Thus begins a government document describing laws pertaining to stem cell research in which President Bush sought a compromise between stem cell researchers thirsting for deferral funding and religious opponents of embryonic research. Despite the president’s policy to win over both those who supported and those who opposed, it satisfied neither. Religious and ethicist adversaries do not want to encourage destruction of human embryos, and researchers wish to advance America’s biomedical research to move toward human cures and treatments. President Bush’s policy allows scientists to currently work on embryonic stem cell lines or cultures, but though research was allowed leeway, restricted funding to only pre-existing stem cell lines has hindered the work on potential cures for diseases that presently have no cure. The policy is not only logically unsound, but insufficient funds have left the gold mine of potential stem cell advantages untapped. Stem cell research funding should extend beyond the private philanthropists, who now support the cause, but also federal research grants—such as those from the National Institute of Health—should also fully aid the cause.

The Domestic Policy Council’s “Advancing Stem Cell Science without Destroying Human Life” was concerned for “human life” and “the inherent dignity and matchless value of every human life” (“Advancing” 4). Since scientists first isolated stem cells in 1998, Bush needed to appease not only his conservative cronies but his growing number of voters intrigued by the latest promise through biomedical research. Bush limited federal funding for stem cell lines from previous destroyed human embryos since their destruction came about “without any taxpayer-funded incentive, and the life-and-death decision on the embryos had already been made” (“United” 6). Though this allotted 21 stem cell lines for scientists who sought federal funds to choose from, George Q. Daley, M.D., PhD, Associate

Professor and Associate Director of the Stem Cell Program at the Children's Hospital Boston, notes fewer lines are actually useable because they are now "outmoded or in disrepair" (Daley xv). Moreover, Bush's diction makes it seem that in every other case not involving his approved pre-existing stem cell lines, sinister scientists hover over their petri dishes dismembering human fetuses. This is not true and actually acts as false propaganda to support anti-stem cell research. The organs from which stem cells are extracted are not fetuses with distinguishable organs or human bodily features: Professor of Government at Harvard University Michael J. Sandel reminds us that they are rather blastocysts—a blob of 180 to 200 cells. The fact that these cells have no properties or genetic material particular to human organs such as a heart, brain, or pair of lungs, makes these cells favorable to "coax" into becoming any type of cell that the biomedical researcher wishes for "study or repair" (Sandel 112-113). Sandel goes on to point out that these blastocysts are "human life" in that they are living human cells opposed to say dead bovine cells; however a skin cell for instance, cannot be considered inviolable in the same way a human is inviolable (115). Moreover, it is not the researchers who sentence these blobs of human cells to their demise, but rather parents.

In-Vitro Fertilization (IVF) is a process, thanks to biomedical research, in which thousands of infertile parents across the country may have hope of conceiving and starting a family. Several eggs harvested from the mother's egg follicles are combined with the father's semen in a petri dish. The fertilized eggs are then implanted in the woman's uterus and wait to nestle themselves in the uterine wall otherwise they are absorbed or lost. However, while implanting all the eggs harvested greatly increases one's chances of eggs implanting in the uterine wall, it also increase the chance of having unwanted multiples when one child is desired. Often the couple will choose to only implant a few of the fertilized eggs and save the others in frozen storage. But because this can be quite costly over time, parents can either donate their fertilized eggs to another couple to have their biological children or donate them to stem cell research. One mother of IVF children showed that often parents choose the

latter. In her situation, five eggs were harvested and fertilized but only two were implanted for fear of too many children. Unable to afford storage, she had the choice to put her eggs to good use or simply destroy them. Though she wished to give her blastocysts to another unfortunate couple, her husband opposed the idea of another couple giving birth and raising their biological children, so she donated the three potential children to research in hopes that her blastocysts could still serve some good in the world (Rudberg). She willingly gave her could-be children to the betterment of research of future life-saving treatments. Furthermore, as a result of over-harvesting, Sandel notes 400,000 other embryos are left to freeze in storage which will eventually be destroyed (110). Though Bush did not support the “murder” of embryos for the sake of research, he allowed the destruction of embryos for the sake of increased chances of conception. He allowed these IVF embryos to slip through the cracks, yet destroyed clusters of human cells to be put to use to better research and potentially treatments and cures for untreatable and incurable diseases are illegal and magnified as “murder” (103).

Stem cell research is the next hallmark of biomedical research and more importantly toward treatments and cures to irreversible injuries and lethal diseases that previously gave little to no hope to suffering patients. Stem cells are cells found in the body that lack specific genetic instructions that tell the cell what kind of cell it should be—where it will be located in the body, how it will function, what shape it will be and what it will produce. These cells are described as “pluripotent” meaning their potential development abilities have a plasticity or unfixed destiny. Scientists can manipulate the pluripotency of the stem cells so that they can become any cell in the body. Research of stem cells can lead to a better understanding of basic units of life; and furthermore can lead to repair of damaged or malfunctioning cells, tissues and ultimately organs in the human body. Author Eve Herold lists the potential of stem cells in *Stem Cell Wars*. Injuries or trauma to vital organs such as the brain or spinal column from severe injuries or strokes which were previously irreversible and non-transplantable can be good as new. Stem cells can provide sooner treatment for the 89,000 Americans waiting for an organ

transplant (13). What is most promising is the ability of stem cells to repair or replace degenerate or dying cells in the human body, and thus the ability to cure numerous diseases resulting from cell degeneration (11). The 60 million Americans with some sort of cardiovascular disease, the 30 million with an autoimmune disease, the 16 million diabetics, the 10 million with osteoporosis, the over 8 million cancer patients, the 4 million with Alzheimer's disease and the over 1.5 million with Parkinson's disease: all have hope in the promise of pluripotent stem cells, Herold notes (10). One would think that a country as competitive scientifically as the United States would wish to fund the answer to millions of prayers worldwide as much as possible, but for reasons other than science, small private investors are the only ones keeping the flame alive in this country.

On the other hand, opposition believes stem cell research must not be supported any further than it already is because it is deemed unethical. Ethics come into question with the current, most common way scientists derive their stem cell cultures: from aborted embryos. For those opposed to abortion, stem cell research is inherently deemed an abomination. Scientists do not respect the value of a human life if they must destroy a living human organism and test the very cells that in a matter of weeks would form an innocent human child. Who has the right to kill an unborn child? Eve Herold, Director of Public Policy research and Education at the Genetics Policy Institute and the author of *Stem Cell Wars* states the religious assert, "Only God can decide when each person will live or die" (23). To the religious, many of which are Catholic, this right can only be held by a greater power—the mysterious, benevolent Maker in the heavens himself. Herold describes in the mind of the religious, for one to take matters of life-and-death into their own hands, is to "play God" (23). Robert Klein of the California Institute for Regenerative Medicine seems to look negatively on those who exercise their "religious right" and who have made "embryonic stem cell research the surrogate battle between religion and science" (qted in *Stem Cell Wars* 21). Klein's frustrations are shared by all whose research or hope in ending suffering is dashed because of what other voters believe contradict their religion. These

“righteous ones,” as long as they have the right to vote, will prevent something contrary to what they hold as their personal beliefs from becoming legal—but do not consider the influences of their votes. If the majority of the voting people do not support testing on aborted lives, these peoples’ votes will decide that government should not pour tax payer money into unethical studies such as embryonic stem cell research. But in making decisions for all, should one take into account not their own religion—which is not shared by all in the country—but take into account what potentially brings the most good to the society as a whole? Millions in America suffer from degenerative cell disease and the many anti-stem cell voters will make them suffer because they believe it is their God’s will for them. True, destroying blastocysts destroys what could be a human child. But if that child grew to have a serious life-altering, or even lethal disease or mutation, would society deny the use of stem cell technology to save that child? The opposition would say that this would require ending one life to save another, but truly, destroying a stem cell blastocyst is not as severe as “ending one life.”

Religious opponents, many Catholic Christians, point to the *Donum Vitae* (“The Gift of Life”), Catholic Doctrine published by the Vatican in 1987, that stated ensoulment begins at conception. Quoted from the “Declaration of Procured Abortion” in the *Donum Vitae*, “From the time that the ovum is fertilized, a new life is begun...a new human being with his own growth” (Walter and Shannon 74). To end life following this point is a sin against God. This explanation of when life begins and when ending an unborn human’s “life” or “immaterial individuality” is unethical is seemingly clear-cut; however, biologically it is quite vague. According to authors James J. Walter and Thomas A. Shannon, who look at bioethics through a Catholic lens, physical individuality is an “absolute or necessary condition for personhood” or life; yet, this does not occur until the third week of pregnancy when gastrulation—the appearance of various, distinct human tissues and organs—occurs (84). Up to the third week the egg has gone from the sperm-penetrated egg to a multicellular-dividing morula, to an implanting blastocyst, to a genetically-equipped zygote, to a full-fledged embryo (Walter and Shannon 71-72). The Catholic authors

say, “to abort life [before gastrulation] would destroy life and terminate genetic uniqueness...but in a moral sense, one is certainly not murdering because there is no individual to be the personal referent of such an action” (84). Stem cell research uses six- to seven-day-old blastocysts because of their lack of genetic uniqueness in its chromosomes to develop into an embryo—“the precursor of an individual member of the human species” (Walter and Shannon 71). As mentioned previously, Sandel also confirms this argument in saying blastocyst cells are merely living, thriving cells versus dead, functionless cells. The blastocyst is also human opposed to cells with genetic material particular to an aardvark. Sandel’s logical equation equates to: blastocysts are living and human, however, are not necessarily “life.” Furthermore, as far as “ensoulment” of the unborn organism goes, Walter and Shannon argue though the pre-embryo has potential future development, if what separates a person from any other mammal in nature is “will as a rational potency,” then “ensoulment” occurs at the integration of the nervous system at the eighth week of gestation (85). To curtail the sufficient funds needed from the government by pointing to doctrine is also faulty—Catholic bioethicists themselves cannot consider with their scientific and religious knowledge combined blastocysts as true human life. Sure, some religious officials will continue to push their *pathos* that the potential humans in the form of blastocysts are manipulated for the sake of science; but there is also *pathos* in the argument for stem cell research. Infants with autoimmune diseases, paralytic youth, young mothers diagnosed with breast cancer—all cases in which life’s potential is obstructed have hope in stem cells. Patients of this sort have hope just as long as research’s potential is also obstructed no longer.

To say that nothing has amounted of stem cell research because there are no current treatments, and thus disbelieving any future treatments or cures, is incredibly false and excessively pessimistic. Even while stem cell research was pushed underground by lack of federal funding under the Bush administration, monumental steps have been made toward human cures and treatments. Dr. George Q. Daley, Associate Director of the Stem Cell Program at Children’s Hospital Boston and Principal

Faculty Member of the Harvard Stem Cell Institute, reminds us with just the little aid from private pro-stem cell research philanthropists, “adult” stem cells discovered in “highly regenerative tissues” leant to alternatives to embryonic stem cells. These cells, however are more difficult to “coax” or reprogram genetically because of their “adult” behavior versus a “non-adult,” embryonic behavior such as in isolated cells from a newborn’s umbilical cord (Daley xiii). Dr. Daley notes another alternative discovered which utilizes “nuclear transfer” by taking the specific patient’s skin cells and injecting it into an embryonic stem cell who’s DNA has been extracted. The skin cell reverts to an embryonic cell and reproduces stem cells with the patient’s genes so the body’s immune system may not reject the potentially helpful cells like a blood donor recipient’s body will reject blood that is not like theirs (xiv). Up to 2007, nuclear reprogramming using skin cells had only successfully worked in mice, but it was only a matter of time until two groups of scientists would make another major breakthrough that would potentially eliminate the embryonic stem cell research controversy. Scientific American, a science magazine devoted to dishing out the latest scoop in scientific research, broadcasted findings that rejuvenated the cheerleaders of stem cell research on November 20th, 2007. Researchers in Japan as well as the United States were able to transplant genes specific to embryonic stem cells into a mouse to make the skin cells function as embryonic stem cells; but furthermore, they also reported successfully inducing genetic pluripotency in human fibroblast (scar tissue) cells (Minkel 1). Scientists must compare their cells and continue studying embryonic stem cells—“the golden standard”—to perfect their method and lab-made cells to make sure no hidden risks exist (Minkel 1). Sufficient federal funding would jumpstart this research progress, but again, Bush’s policy “hinders robust growth in the field” just as Dr. Daley states dejectedly (xv).

If private philanthropy has gotten stem cell research to where it is today since 1998, one can only imagine how much farther and faster researchers will reach long-awaited cures and treatments with federal funding. Religion and politics aside, stem cell research is the quest for the Holy Grail in

biomedicine—so much suffering could cease by the ability to mold these malleable cells. Though scientists are not far off from completely avoiding embryonic stem cells, they must continue to study them to bring the dream of cures and treatments to fruition—and federal funding will make all the difference. Why should the United States hinder their own ability to compete in the worldwide race toward creating cures for degenerative cell diseases such as cancer and cardiovascular disease—the leading killers of Americans? Religious voters may raise their eyebrows, but it is about time they are informed of all the promises of stem cells. Because Bush is no longer in office, there is once more hope for change in federal funding for stem cell research.

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