

Fetal Tissue and Embryo Stem Cell Research:

The March of Dimes, NIH, and Alleged Moral Neutrality

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2000, Scott Klusendorf
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I. Introduction: Summary of Talking Points on Fetal Tissue Research

A. Moral concerns (See pp. 7-14):

1. Reasonable persons should commend The March of Dimes for its laudable work improving the health of babies, preventing birth defects, and reducing infant mortality. These are good and noble actions.
2. But good deeds do not atone for bad ones. By embracing fetal tissue research and destructive embryo research, The March of Dimes has violated the principle that made it a great organization: its basic commitment to assist the small, weak, and defenseless. It's regrettable that this great organization would treat the most vulnerable members of the human community, the unborn, as disposable instruments to be used for someone else's benefit.
3. Funding research that deliberately destroys one human being so another may benefit is not only a serious moral wrong, it is unnecessary. There is no credible evidence that embryonic human beings must lose their lives in order to save ours.
4. The alleged moral neutrality of the March of Dimes on abortion is not neutrality at all. By agreeing that human embryos and fetuses are fitting subjects for destructive research, the MOD is taking a position that they do not deserve the same protections given to newborns or other persons that cannot consent to medical treatment. This is hardly a neutral position.

B. Alternative treatments (see pp. 16-29)

1. It is now clearer than ever that we can treat the sick without killing the vulnerable. Contrary to what has been repeated again and again, human embryos are not the only source for stem cells. Startling new evidence indicates that adult stem cells are not only effective alternatives to destructive embryo research, but are better at battling disease.¹ In fact, the *British Medical Journal* goes so far as to observe that "the need for fetal cells as a source of stem cells for medical research may soon be eclipsed by the more readily available and less controversial adult stem cells."² In short, the choice between medical progress and moral principle is a false dilemma. We can pursue the cure of disease in morally acceptable ways.

¹ L. Johannes, "Stem Cells from Adults Have an Edge Battling Disease, *Wall Street Journal*, April 13, 2000

² Deborah Josefson, "Adult Stem Cells may be Redefineable," *British Medical Journal*, January 30, 1999.

2. Stem cells have been found in a wide variety of adult tissues including the brain, liver, pancreas, and bone marrow. Already, researchers have coaxed stem cells from adult bone marrow into becoming nerve cells that could treat conditions ranging from paralysis to Alzheimer's disease.³ Stem cells extracted from the patient's own bone marrow are less likely to be rejected than neural cells from foreign sources.

C. Legal Concerns—Embryo research violates the law:

1. As U.S. Senator Sam Brownback points out, Congress outlawed federal funding for harmful embryo research in 1996 and has maintained that prohibition. The ban is broad based and specific: Funds cannot be used for "research in which a human embryo or embryos are destroyed, discarded, or knowingly subjected to risk of injury or death." The intent of Congress is clear: If a research project requires the destruction of human embryos, then it is illegal to use federal funds for the project.
2. In clear defiance of the law, the Clinton Administration, working through the National Institutes of Health (NIH), authorized federal funds for destructive embryo research. The NIH argued that public funds would not be used to destroy the embryos, only to conduct research after the embryos are killed. This is incoherent reasoning. The deliberate killing of a human embryo is an essential component of the proposed federal research. Without the destruction of the embryo, research is impossible. The NIH's determination to pursue human embryo research show contempt for, and defiance of, the legislative will of the U.S. Congress.

II. Summary of Results from Fetal Tissue Research (partial list)

- A. **Overview:** While fetal tissue research (secured from elective abortions) receives glowing press reports, the actual evidence shows mixed or inconclusive results. Neurologist Paul Ranalli of the University of Toronto School of Medicine calls the cumulative research to date "hugely unimpressive." *The New York Times* summarized a large fetal cell study funded by the National Institutes for Health (for Parkinson's Disease—see below) as having only a hint of success. Meanwhile, numerous peer-reviewed studies suggest that alternative sources for stem cells (i.e. those not involving discarded embryos) show promise in treating Parkinson's Disease, Alzheimer's Disease, and other degenerative disorders.

³ Maggie Fox, "Researchers Make Nerve Cells from Bone Marrow," Reuters, August 14, 2000.

B. Summary of treatments using fetal cell therapy (partial list):

1. **Parkinson's Disease:** The National Institutes for Health (NIH) published results from a federally funded study at the University of Colorado (Denver) where Parkinson's patients were given fetal dopamine cells taken from aborted fetuses. Forty patients participated, with 20 receiving the fetal implants, 20 a placebo treatment. Patients did not know whether they received the placebo until one year later, when the results were tallied. The benefit to patients was marginal. First, those over age 60 showed no significant improvement over the placebo group. Nor did they perceive any benefit from the therapy in terms of their daily activities. Furthermore, the implants did not reduce the need for any drugs that the patients were taking for the disease.⁽¹⁾ In other words, for the group suffering the worst from Parkinson's, fetal tissue transplants were a complete failure. Second, those under age 60 showed improvement in only two areas, bradykinesia (slowness of movement) and rigidity (stiffness of muscle). There was no improvement in the younger group in terms of "freezing" (sudden loss of all movement), tremors, balance, or falling.⁽²⁾

Sources:

- (1) "Fetal Cell Therapy Benefits Some Parkinson's Patients: First Controlled Clinical Trial Shows Mixed Results," National Institutes for Health, press release, April 21, 1999.
<http://www.nih.gov/news/pr/apr99/ninds-21.htm>.
- (2) Paul Ranalli, "Media Sugarcoats Fetal Tissue Transplant Failure," *National Right to Life News*, June 10, 1999.
http://www.nrlc.org/baby_parts/ranalli.htm

2. **Spinal cord injuries.** University of Florida College of Medicine and Brain Institute (Gainesville, FL) announced plans to graft human fetal nerve tissue into the cystic cavities of several human subjects. By implanting the nerve tissue directly into the damaged areas of the spine, researchers hoped to slow the progression of a rare degenerative condition called syringomyelia.^(1,2) The treatment is straightforward: fetal cells are injected into the damaged cystic cavities in hopes they will grow to replace the damaged spinal tissue. Researchers insisted that the goal of the experimental surgery was not to restore mobility or feeling to the damaged spine, but to see if the procedure could be done safely. As of fall 1998, there were few adverse effects. However, it remains unclear whether the treatment will actually benefit patients ⁽³⁾

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- (1) Ray Washington, "Fetal Tissue Transplant Debated," *The Gainesville Sun*, July 15, 1997.
www.sunone.com/news/articles/07-154.html
- (2) "Scientists to Treat SCI with Fetal Tissue," *New Mobility Magazine*, January, 1997
<http://user.mc.net/dougp/ftnew28.htm>
- (3) "How Close is a Cure for SCI?" *Spinal Cord Injury Update*, Interview w/ Wise Young, MD., Department of Rehabilitation Medicine, University of Washington, Summer, Fall 1998.
www.depts.washington.edu/rehab/sci/update-cure8-2.shtml

3. **Retinal damage.** In January of 1997, University of Chicago surgeons transplanted retinal cells from an aborted fetus into the eye of an 80-year old woman in hopes of curing a macular degeneration of her retina.⁽¹⁾ At the same time, researchers at the University of Rochester (under the direction of Dr. Manual del Cerro) implanted fetal cells into 18 patients suffering from retinitis pigmentosa, a degenerative retinal condition that affects 1.5 million people worldwide. The tissue was taken from fetuses aborted at 14 to 18 weeks gestation. The longest follow-up to date has been 2.5 years on four patients, but there is little evidence of inflammation, infection, overt rejection or compromise to the host eye in any patients. There was one case of retinal detachment. In this patient, vision worsened from hand motion to light perception. Three patients showed a 4 to 10 fold increase in light sensitivity starting one to two months after transplantation. Two of these patients have since returned to their pre-operative baseline. Six patients have shown improvement in vision starting 4 to 6 months post-transplantation, which has been sustained to date. Two of these patients developed the ability to undergo visual field testing that involved broad motion sensing, but there were no dramatic improvements in sight capability.⁽²⁾ While media reports spoke of a new cure for blindness, Dr. Paul Ranalli, a neurologist at the University of Toronto, called the transplants a failure.

"For example, two of the patient 'successes' could only detect hand motion, two others could count fingers (held right in front of the eye) and one had only a "little keyhole view of the world," in del Cerro's words, in which he could apparently read the 20/200 line on the eye chart. (This is the big "E" on the chart, or ten times worse than normal 20/20 vision, and no different than counting fingers at ten feet.) The other three transplanted patients, of course, did not even achieve this minimal improvement.

"Interestingly, the pre-operative vision, of the subjects was described, not as being completely blind, but as being able to perceive the difference between light and dark. In reality, this pretreatment visual capability represents very little difference from the reported hand-motion/finger-counting vision after transplant. This raises questions about how meaningful even this minimal improvement might be."⁽³⁾

"You have to be very cautious when you claim improvement of vision," noted Dr. Cynthia McKay of Columbia University, in an interview published in the *Boston Globe* on Nov. 18. "RP is such a desperate disease and patients want so much to do better." ⁽⁴⁾

"I think it's extremely unlikely that it's causing functional improvement," Dr. Elliot Berson of Harvard Medical School's Massachusetts Eye and Ear Infirmary told the *Globe*. Dr. Berson also cast a skeptical eye on Dr. del Cerro's previous animal research results. Berson had examined several rats that received fetal transplants and were deemed a success.

"He found no discernible difference from other blinded rats when tested with the standard retinal function test called ERG (elektroretinogram). None of the human subjects were evaluated with ERG. In an interview with Science News, Dr. Peter Courras, retinal researcher at Columbia University concluded, "I simply don't believe these results." ⁽³⁾

Sources:

- (1) Peter Gorner, "New Hope for Old Eyes," *Chicago Tribune*, January 31, 1997
www.chicagotribune.com
- (2) Manual del Cerro, *et al*, Human Neural Transplants into Retinitis Pigmentosa: Facts and Controversy," *Digital Journal of Ophthalmology*, 1998, vol. 4, #3.
www.djo.harvard.edu/meei/OA/FT/FT.html
- (3) Paul Ranalli, "Pattern of Fetal Tissue Transplant Failures Continues," The deVeber Institute of Bioethics and Social Research, January 1997.
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- (4) Richard Knox, "Fetal Tissue Reported to Aid Sight," *Boston Globe*, Nov. 18, 1996.
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III. **Summary of Embryonic Stem Cell Research (ESCR)**

A. **Overview of ESCR:**

In the quest to repair damaged tissue resulting from Parkinson's disease, Alzheimer's disease, etc., medical researchers are conducting studies with embryonic "pluripotent" stem cells. These cells are fast growing, unspecialized cells that can reproduce themselves and grow new organs for the body. All 210 different kinds of tissue in the human body originate from these cells. Because they have the potential to grow into almost any kind of tissue, scientists believe that the introduction of healthy stem cells into a patient may restore lost function to damaged organs.

The current debate over embryo research began in August 1993 when the National Institutes for Health (NIH) requested panel discussions for the purpose of issuing ethically and legally appropriate guidelines for the controversial research. In an a bizarre twist of logic, the panel concluded that embryos are entitled to "profound respect, but this does not necessarily encompass the legal and moral rights attributed to persons."⁽¹⁾ Put simply, we should profoundly respect human embryos, but we may kill them to benefit others. The convoluted logic of the panel troubled many ethicists, including some that generally support abortion. Daniel Callahan of the Hasting's Institute writes, "I have always felt a nagging uneasiness at trying to rationalize killing something for which I have profound respect."

B. **Alleged NIH moral neutrality**

The NIH panel sought to sidestep the question of fetal (or embryo) personhood by claiming a neutral posture toward it. Despite its rhetoric, the panel's position was anything but neutral. Francis J. Beckwith explains:

The main ethical concern for the panel was the moral permissibility of creating human embryos for the sole purpose of experimenting on them. After hearing thousands of hours of testimony by experts on all sides of the debate, the panel concluded in its final report that some research was acceptable for federal support, some warranted further review, and some was unacceptable. But what is remarkable is how the panel attempted to sidestep the issue of personhood, apparently believing that it was possible to make policy without addressing it. In the first 300 words of the report's executive summary, the panel writes that "it conducted its deliberations in terms that were independent of a particular religious or philosophical perspective." Yet, the panel supported federal funding of research on the preimplanted embryo on the

basis that “it does not have the same moral status as infants and children” because it lacks “developmental individuation . . . , the lack of even the possibility of sentience and most other qualities considered relevant to the moral status of persons, and the very high rate of natural mortality at this stage.’ Clearly, despite its earlier disclaimer that it would propose recommendations “independent” of any perspective, the panel affirmed (and argued for) a policy that is, by its own admission, dependent on a philosophical perspective, for it was employed by the panel to distinguish between those beings who are and who are not members of the moral community of persons. (2)

In other words, the panel, in supporting destructive embryo research, *did in fact* take a position on the question of who is and is not a person. It concluded that embryos were not. This is hardly a neutral position.

C. **Moral objections:**

Despite the alleged benefit to patients, ESCR is morally problematic for at least five reasons. First, you must kill the embryo to harvest its stem cells. If the embryo is a human person, killing it to benefit others is a clear-cut evil. It treats a distinct human being, with his or her own inherent moral worth, as nothing more than a disposable instrument to be used for someone else’s benefit. (I present a defense for the personhood of the embryo in section V., the Appendix.) The daunting prospect of creating a class of human subjects for the purpose of destructive research led Congress to ban federally funded [destructive] embryo research in 1996. Currently, the law specifically states (under Section 511 of the Labor/HHS Appropriations Bill for Fiscal Year 1999) that no funds may be used to create or destroy human embryos for research purposes.

Advocates of ESCR replied that research would be limited to those embryos scheduled to die anyway, specifically, ones leftover from invitro fertilization (i.e. so-called “spare” embryos) and those slated for elective abortions. In both cases, researchers would secure parental consent before harvesting the cells.

Critics of ESCR were quick to point out that this turns the nature of parental consent on its head. Following the Nuremberg Trials in 1948, the United States joined several nations in publishing ethical protocols for human experimentation. Those protocols clearly state that no human can be subjected to medical experiments without his or her full knowledge and consent.(3) If that individual cannot give consent, a parent or guardian/protector can be appointed to make the decision. However, no experiment should be conducted where there is an a

priori reason to believe that death or disabling injury will occur. Concern for the interests of the subject must always prevail over the interest of science and society. When a mother consents to an elective abortion or the discarding of leftover embryos, she abdicates her parental role as protector of the child's best interest. She has, in fact, signed her child's death warrant. Therefore, neither she nor anyone else can give authentic consent to destructive research because there is no honest attempt to serve the best interest of the child.

Furthermore, the claim that research is justified because "these embryos are going to die anyway" is specious. Even if an individual's death is imminent, we still do not have a license to use him for lethal experiments. We cannot, for example, conduct experiments upon death-row prisoners or harvest their organs without their consent. Nor can we extract body parts from mortally wounded soldiers while they are dying on the battlefield.

Second, ESCR is morally problematic because an evil means is used to secure a good end. In essence, accepting embryonic stem cells obtained through elective abortion makes one an accomplice to a crime after the fact. Unlike adult organ donations, the death of the embryo is intentionally caused. This is hardly the same as when organs are recovered from someone killed in a tragic accident. Consider the case of a hospital that becomes the beneficiary of a gang of killers who supply it with fresh cadavers. Surely one could question the moral appropriateness of the hospital's continuing cooperation with the suppliers. Or, as Scott Rae points out, what about a banker who regards the drug trade as morally wrong, yet agrees to accept drug money to finance housing for the poor? The banker in this case would be involved in complicity with the drug trade, even though he is not involved with the actual sale of narcotics.⁽⁴⁾

German doctors convicted at the Nuremberg Trials argued passionately that they were only using the brains of Jews for the common good. They claimed that SS troops, not doctors, killed the Jews. Therefore, physicians had a moral imperative to make beneficial use of bodies the SS troops supplied them. The Court at Nuremberg rejected this claim. In the United States today, the *New England Journal of Medicine* and nearly every other peer-reviewed journal refuses to publish any results from the Nazi experiments because of the nature of the crimes committed.

Third, the rationale used to disqualify the embryo as a person strips all human beings, born and unborn, of inherent dignity. The 1994 NIH

panel concluded that the human embryo deserves “profound respect,” but does not have the status of a human person. Panelists relied on the theory of panel member Ronald Green, who argued that human beings could be excluded from “personhood” if recognizing them as “persons” would block beneficial research.⁽⁵⁾ By this approach, there is no inherent value in any human being—of any age or condition—obliging us to respect that individual as a member of the human family. Put simply, Green’s ethics are thoroughly utilitarian. Right and wrong are determined solely by the consequences of a given act. Actions are moral if they increase happiness (benefits) and decrease pain for the greatest number of people.

However, some things—rape, slavery, murder—are wrong in themselves and cannot be justified with an appeal to overall benefit. Common sense dictates that we weigh both the rational intent of an act (deontological ethics) with its foreseen consequences (utilitarian ethics). If morals are strictly consequential, as Green implies that they are, how do we condemn a scientist who tortures toddlers to benefit pain research? Or, what if killing a child in the Roman Coliseum helps 50,000 sadists permanently overcome depression at the expense of only one person experiencing pain? Clearly the benefit to the thousands would exceed the pain of one child, but would that make the act just?

Green, of course, cannot say that the pain of the child outweighs the pleasure of the crowd because according to his view, a human child needed for medical research is no longer a “person” with rights we ought to respect. Furthermore, how would he know that the pain of the child is greater than the happiness of the crowd? What if the torture victim was not a child, but an adult who actually enjoyed the perverse treatment? Given that everyone benefits, it’s hard to imagine how Green could condemn such an act.

Fourth, the distinction between “spare” embryos and “research” embryos is morally incoherent and practically unworkable. The NIH panel insists that human embryos deserve “profound respect,” though destroying them for research purposes is not wrong. To hedge its incoherent position, the 1994 NIH panel proposed that destructive harvesting of cells be limited to so-called “spare embryos” from fertility clinics (which the NIH now calls embryos “in excess of clinical need”). Panelists insisted this was less immoral than creating embryos specifically for research. Congress in 1996, however, soundly rejected the distinction, with the House of Representatives voting 256-167 to deny federally sponsored research on any human embryo.

They were right to do so. Morally, if it is wrong to create human embryos for destructive research, that is largely because destroying embryos for research purposes is *itself* an egregious moral wrong. It treats a distinct human being, with inestimable moral worth, as nothing more than a disposable instrument for someone else's benefit.

Conversely, if one takes the view that human embryos have no inherent moral worth—that their value is purely instrumental—then why not create them solely for destructive research? ABC News ran a story four years ago about a woman whose father was suffering from Parkinson's Disease. Having heard that brain cells from aborted babies could be used to treat the disease, she sought to conceive a child for the express purpose of aborting it four months later so its body parts could be used to treat her father. The NIH panel strictly forbids using tissue this way, but on what moral grounds? If the human embryo or fetus has no inherent worth, why not decide in advance that its sole purpose is to treat others?

Fifth, there is evidence that ESCR (and fetal tissue harvesting in general) could enhance abortion's image as a moral good. At a minimum, it will convince some women that killing their unborn offspring redeems a desperate situation. While ESCR may not dramatically increase abortion rates among women not inclined to abort (pro-life advocates must be careful to not overstate their case here), it could influence those who are undecided. Research shows tremendous ambivalence among women facing crisis pregnancy, with many suffering intense anxiety in the 24 hours before the abortion.⁽⁶⁾ The prospect of "redeeming the abortion" to provide tissue for someone else throws a powerful motivation into a psychologically complex situation. A 1995 study by the Joint Centre for Bioethics at the University of Toronto found that, among women who would consider abortion, 17 percent would be more likely to have one if fetal tissue could be donated for medical use.⁽⁷⁾ When one considers the 1.4 million abortions performed annually in the United States, the increase that may occur is a genuine public health concern.

D. **Legal objections: NIH defies Congress**

Critics of ESCR argue that not only is the research morally objectionable, it violates the law. Despite the congressional ban of 1996 (known as the Dickey-Wicker amendment), the Clinton Administration, working through the Department of Health and Human Services (HHS), announced that the federal government may fund research on stem cells harvested from human embryos even though the embryos are destroyed in the process.

As Hannah Vick explains, HHS lawyers defended this decision by saying "that human embryonic stem cells are not a human embryo within the statutory definition" because "the cells do not have the capacity to develop into a human being even if transferred to the uterus, thus their destruction in the course of research would not constitute the destruction of an embryo." Under this new interpretation, human embryonic stem cell research would not be subject to the Dickey-Wicker Amendment, and federal money could be allocated to embryonic research. The HHS interpretation prompted the National Institutes of Health ([NIH](#)) to write new guidelines outlining the use of embryonic stem cells in research under full government funding.⁽⁸⁾

According to the Center for Bioethics and Human Dignity's "Statement on Human Embryos and Stem Cell Research," federally funded researchers may soon be able to experiment on stem cells obtained by destroying embryonic human beings, so long as the act of destruction does not itself receive federal funds.⁽⁹⁾ The HHS interpretation makes a distinction between destroying the embryo and using embryos that were destroyed, thereby allowing research on human embryos with taxpayer dollars. However, even the Clinton administration's National Bioethics Advisory Committee (NBAC) denies that this distinction is valid, as is evident by the following statement in its May 6, 1999, Draft Report on Stem Cell Research:

Whereas researchers using fetal tissue are not responsible for the death of the fetus, researchers using stem cells derived from embryos will typically be implicated in the destruction of the embryo. This is true whether or not researchers participate in the derivation of embryonic stem cells. As long as embryos are destroyed as part of the research enterprise, researchers using embryonic stem cells (and those who fund them) will be complicit in the death of embryos.⁽¹⁰⁾

Douglas Johnson, legislative director for the National Right to Life Committee, agrees. "If we had a law that barred research in which porpoises were killed, no one would entertain for five seconds that a federal agency could arrange for someone else to kill the porpoises and then proceed to use them in research."⁽¹¹⁾

Nonetheless, the NBAC recommended modifying the current ban against federal funding even though The HHS interpretation and the NIH guidelines clearly violate the Dickey-Wicker Amendment. In response, 100 experts in the fields of law, science, and ethics signed a statement charging that federal funding for the destruction of human

embryos is a violation of U.S. law, morally problematic, and should not be allowed.⁽¹²⁾

The statement was ignored. On August 23, 2000, the NIH issued new guidelines allowing federal funding for destructive embryo research.⁽¹³⁾ Rep. Dickey said congress would challenge the new guidelines in federal court.

E. Role of the March of Dimes (MOD)

On July 29, 1999, the MOD, along with 124 other organizations, petitioned Congress to allow federal funds for destructive embryo research.⁽¹⁴⁾ (The organization signed a similar letter in 1991 supporting an override of the Bush administration's ban on federally funded tissue research from elective abortions.) The petition states that embryonic stem cells "have enormous potential for treatment of disease" and that public opinion supports the research. The signers dismiss alternative stem cell research (that which does not involve the destruction of human embryos) as insufficient, noting it would be a "grave mistake" to limit study to that area alone.

F. The March of Dimes and Moral Neutrality

Throughout the debate over fetal tissue research and ESCR, the March of Dimes has declared itself neutral on the philosophical questions surrounding the abortion controversy.

However, the alleged MOD neutrality is not neutrality at all. The morality of abortion pivots on just one question: Is the fetus (or embryo) a human person? If so, research on human embryos should be conducted within the same guidelines we use for other children who, because of immaturity, cannot consent to treatment themselves. That is to say, the research must personally benefit the embryo and place it at no significant risk. If, on the other hand, embryos are not human persons, killing them for destructive research requires no more justification than pulling a tooth.

By agreeing with the NIH panel that human embryos are fitting subjects for destructive research, the MOD is taking a position that embryos do not deserve the same protections as do toddlers or other human persons. The MOD, for example, would never fund destructive medical research on two-year olds scheduled for execution by a totalitarian regime. Hence, the MOD, in supporting such research on human embryos, is taking a position that embryos are not the moral equivalent of fully human toddlers. This is hardly a neutral position.

Suppose a 19th century medical school delivered this opinion on the issue of slavery: “We take no position on the morality of owning slaves. We are neutral. However, in our quest to cure many diseases, we fund many groups that conduct medical experiments on those African American slaves scheduled for execution. Rest assured: We do not pay money for these groups to kill slaves. They must use private funds for that. We pay only for the beneficial research they conduct after the slave is killed. In fact, we think slaves deserve profound respect. However, they do not carry the same moral status as white people. Once the slaves are executed, it would be morally wrong to let all that tissue go to waste. Remember this: These slaves are going to die anyway and we don’t pay people to kill them. We simply fund the research after the fact.”

Would anyone in America today consider this a “neutral” position on slavery? Clearly, the 19th century medical school would be complicit in the deaths of those executed slaves. By funding the research, it would be taking a position that black slaves are the sorts of beings that can be killed and treated as property.⁽¹⁰⁾ The message would be clear: Blacks are not full-fledged members of the human community.

In fact, the NIH guidelines supported by the MOD specifically demean the value of the human embryo. The guidelines tell researchers to assure parents that their “early human embryos...will not survive the experiment, but “will be handled respectfully, as is appropriate for all human tissue used in research.”⁽¹⁵⁾ In short, live human embryos are dismissed as mere tissue to be destroyed for useful cells.

The NIH justifies this destruction in part as a humane alternative to animal research. In fact, PETA (People for the Ethical Treatment of Animals) is now paying research labs \$250,000 if they will use human embryos for toxicity tests instead of mice.⁽¹⁶⁾ Thanks to the NIH guidelines, the human embryo now ranks lower in status than a laboratory rat.

Reasonable persons should commend the March of Dimes for its laudable work improving the health of babies, preventing birth defects, and reducing infant mortality. These are good and noble actions.

But good deeds do not atone for bad ones. By embracing fetal tissue research and destructive embryo research, the March of Dimes has violated the principle that made it a great organization: its basic commitment to assist the small, weak, and defenseless. Its unfortunate that this great organization would treat the most vulnerable members of the human community, the unborn, as nothing more than disposable instruments to be used for someone else’s benefit.

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- (12) Center for Bioethics and Human Dignity. See note #9 above.
<http://www.stemcellresearch.org/statement.htm>
- (13) Aaron Zitner, "NIH Expected to Allow Embryo Research," *Los Angeles Times*, August 23, 2000.
<http://latimes.com/news/nation/20000823/t000079205.html>
- (14) Stem Cell Letter to House and Senate Appropriations Committees, July 29, 1999
Letter requests funding for embryonic stem cell research.
<http://www.aamc.org/advocacy/corres/research/stmcell2.htm>
- (15) "Draft National Institutes of Health Guidelines for Research Involving Human Pluripotent Stem Cells (December 1999), *Federal Register*, December 2, 1999, pp. 67576-91.
http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=1999_register&docid=99-31339-filed
- (16) Joseph Farah, "Sacrificing Human Beings to Save Animals?" World Net Daily
http://www.worldnetdaily.com/bluesky_exnews/20000110_xex_sacrificing_.shtml

IV. Alternatives to Destructive Embryonic Stem-Cell Research

A. Overview:

Startling new research indicates that we can treat the sick without killing the most vulnerable members of the human community. We now know that adult stem cells are far more effective at treating disease than previously thought.

Supporters of ESCR, like actor Christopher Reeve, charge that embryonic stem cells are needed because adult stem cells are not "pluripotent (i.e. capable of transforming into other types of cells used to grow new organs, etc.)" However, recent peer-reviewed evidence disputes Mr. Reeve's claim:

1. Adult bone marrow stem cells can provide an abundant and accessible supply of neural cells for transplant. These cells are thought to be "pluripotent," meaning that upon transplantation, they can differentiate and become other tissue as needed for the body. Because these cells are obtained from the patient's own body, they are a perfect genetic match.
2. Cord blood (i.e. that taken from the umbilical cord at birth) contains a rich supply of stem cells useful for treating disease.
3. Retinal stem cells from the adult eye can be used to treat degenerative eye diseases.

4. Stem cells from the patient's own brain show promise for treating Parkinson's Disease, Alzheimer's Disease, and stroke damage.
5. Corneal stem cells are useful for treating severe ocular surface disorders of the eye.
6. Stem cells from adults may have an edge over embryonic stem cells in battling disease.
7. Stem cells taken from bone marrow can be coaxed into becoming nerve cells that can help repair the brain.
8. Pancreatic stem cells can reverse diabetes in mice.

Note: These dramatic developments are summarized below. Most of the peer-reviewed studies cited in the summaries can be found in Appendix #2. In some cases, various press stories on the research are also included with the peer-reviewed evidence.

B. Summary of alternative stem-cell research listed by journal cites

1. Parkinson's Disease and other neurological disorders:
 - ***Journal of Neuroscience Research*** (July 31, 2000): Adult bone marrow stem cells can be grown into neural stem cells for the brain and spinal cord, raising the likelihood that treatment for Alzheimer's Disease and Parkinson's Disease can be pursued without killing human embryos. According to researchers, adult stem cells found in the bone marrow can be coaxed to provide "an abundant and accessible" supply of nerve cells for the brain. The authors say this confirms earlier studies suggesting that adult stem cells "may be less restricted than was previously thought"—that they can indeed be "pluripotent" (i.e. able to develop into other tissue for growing organs or repairing body parts). Because these stem cells come from the patient's own bone marrow, there is no risk of the body rejecting the tissue.

Sources:

- (1) Dale Woodbury, Emily Schwarz, Darwin Prockop, Ira Black, "Adult Rat and Human Bone Marrow Stromal Cells Differentiate Into Neurons," *Journal of Neuroscience Research*, July 31, 2000, 61: 364-370.
<http://www3.interscience.wiley.com/cgi-bin/fulltext?ID=72514189&PLACEBO=IE.pdf>
- (2) Maggie Fox, "Researchers Make Nerve Cells from Bone Marrow," Reuters, August 14, 2000.
<http://news.excite.com/news/r/ooo814/health-paralysis>

- (3) Richard Doerflinger, "Science and Morality: No Conflict," *Life Issues Forum*, August 18, 2000.
<http://www.nccbuscc.org/prolife/publicat/lifeissues/08182000.htm>
- (4) Jeremy Olson, "From Stem Cells to Brain Cells," *Omaha World-Herald*, August 15, 2000.
<http://www.omaha.com/Omaha/OWHStoryViewer/1.3153.371247.00.html>
- (5) "Researchers Grow Brain Stem Cells from Bone Marrow Stem Cells," CNN, August 15, 2000.
<http://www.cnn.com/2000/HEALTH/08/15/brain.stemcell/index.html>

- ***Proceedings of the National Academy of Sciences*** (September 14, 1999): Stem cells taken from the bone marrow of adult mice become nerve cells when inserted into the brains of newborn mice, a finding researchers say is promising for the treatment of Alzheimer's Disease and other neurological diseases. The adult cells appeared to have the properties of embryonic stem cells—underdeveloped cells that can become any type of cell in the body. Once they are multiplied, these bone marrow stem cells can be transplanted to cure several neurological disorders.

Sources:

- (1) Gene Kopen, Darwin Procktop, and Donald Phinney, "Marrow Stomal Cells Migrate throughout Forebrain and Cerebellum, and the Differentiate into Astrocytes After Injection Into Neonatal Mouse Brains," *Proceedings of the National Academy of Sciences*, vol.96, pp.10711-10716, September 1999.
<http://www.pnas.org/cgi/reprint/96/19/10711.pdf>
- (2) "Bone Marrow Stem Cells Turn Into Brain Cells in Study," Bloomberg News, September 13, 1999.
<http://www.bloomberg.com>

- ***Neuron*** (April 1999): In a dramatic turn of events, scientists reversed Parkinson's symptoms in monkeys who were treated with their own carotid cells. The cells, taken from small organs in the back of the neck, were transplanted into the brains of those monkey's with the Parkinson's, symptoms. The treatment restored the damaged sections of brain, as well as coordinated body movements. The new approach was far better than using fetal cells, producing over 35 times as much of the neurotransmitter dopamine (the key chemical used to treat Parkinson's). Trials on humans begin this year.

Sources:

- (1) Jose Lopez-Barneo, *et al*, "Recovery of Chronic Parkinsonian Monkeys by Autotransplants of Carotid Body Cell Aggregates into Putamen," *Neuron*, Vol.22, 743-750, April 1999.
<http://www.neuron.org/cgi/content/full/22/4/751/>
 - (2) Phillip Hilts, "Monkeys' Own Cells Reported to Reverse a Nerve Disorder," *New York Times*, April 22, 1999.
<http://www.nytimes.com/library/national/sci.../042299sci-monkey-parkinsons.htm>
 - (3) Richard Doerflinger, "Destructive Embryo Research Plan Being Readied for Public Comment," *National Right to Life News*, May 1999.
<http://www.nrlc.org/news/1999/nrl599/doer.html>
- **Science** (June 2, 2000): Adult neural stem cells are shown to have broad differentiation abilities. Previously, researchers thought these neural cells were limited to reproducing cells identical to the organs from which they came. This study demonstrates that adult neural cells have a very broad developmental capacity and may potentially be used to generate a variety of cell types for transplantation in different diseases.

Source:

- (1) Diana Clarke, *et al*, "Generalized Potential of Adult Neural Stem Cells," *Science*, Vol. 228, #5471, June 2, 2000, pp. 1660-1663.
<http://www.sciencemag.org/cgi/content/abstract/288/5471/1660?maxtosh.../2000>
- **Proceedings of the National Academy of Sciences** (June 1999): In studies with "shiverer" mice, scientists at Harvard Medical School and Children's Hospital report that neural stem cells can "globally" repair damaged cells throughout the brain. After transplantation to the mouse brain, neural stem cells migrate to damaged areas, reversing "shivering" (Parkinson's like tremors) symptoms. Researchers conclude that neural stem cells can differentiate, making them useful for treating a variety of neurological diseases.

Sources:

- (1) Evan Snyder, *et al*, "Global Cell Replacement is Feasible via Neural Stem Cell Transplantation: Evidence from the Dysmyelinated Shiverer Mouse Brain," *Proceedings of the National Academy of Sciences*, Vol. 96, pp. 7029-7034, June 1999.
http://www.pnas.org/cgi/content/full/96/12/7029?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&searchid=QID_NOT_SET&FIRSTINDEX=&volume=96&firstpage=7029

(2) "Advances in Alternatives to Embryonic Stem Cell Research," *Stem Cell Report*, June 2000.
<http://www.stemcellresearch.org/scr-june2000.htm>

(3) "Global Cell Replacement Uses Neural Stem Cells," *UniSci*, June 8, 1999.
<http://www.unisci.com/stories/19992/0608993.htm>

- **British Medical Journal** (January 30, 1999): Adult neural Stem Cells are redefineable and can "reinvent" themselves when transplanted. In fact, researchers found that adult stem cells were as effective in reconstituting the immune system as fetal neural stem cells. In addition, the problem of immune rejection can be circumvented when an individual's own cells are used. The article states that "the need for fetal cells as a source of stem cells for medical research may soon be eclipsed by the more readily available and less controversial adult stem cells."

Source:

(1) Deborah Josefson, "Adult Stem Cells May be Redefineable," *British Medical Journal*, January 30, 1999.
<http://www.bmj.com/cgi/content/full/318/7179/282/b>

- **Science** (February 25, 2000): Neural stem cells are found not only in primitive embryonic stem cells, but also in the adult nervous system of all mammalian organisms, including humans. Potential uses of these adult stem cells include transplantation to repair missing cells and the activation of endogenous cells to provide self-repair.

Source:

(1) Fred Gage, "Mammalian Neural Stem Cells," *Science*, 287: 1442-1446, February 25, 2000.
www.sciencemag.org/cgi/content/short/287/5457/1433

- **Science** (February 25, 2000): This article surveys current research showing the apparent unrestricted development potential of adult stem cells. It seems reasonably clear (though further studies are needed to provide conclusive proof) that adult stem cells from bone marrow can grow new skeletal muscle and new liver cells. Meanwhile, adult neural stem cells are self-renewing and, if transplanted, participate in the repopulation of damaged brain tissue.

Sources:

(1) Derek van der Kooy, Samuel Weiss, "Why Stem Cells?" *Science*, Vol. 287, February 25, 2000, pp. 1439-41.
<http://www.sciencemag.com>

(2) See also a related article, "Hearts can Grow Their Own Bypasses," Associated Press, March 3, 1999; cited in *USA Today*, March 3, 1999.
<http://www.usatoday.com/life/health/heart/lhhea034.htm>

- **Reuters** (June 29, 2000): News story summarizes current research indicating that embryonic stem cells may no longer be necessary for developing cell and tissue replacements for degenerative diseases. Adult stem cells found in various tissues of the human body may be just as capable of acting like "master cells" and becoming different types of body tissue. This flies in the face of earlier assertions that adult cells can no longer differentiate (i.e. turn into other types of cells). Instead, this differentiation across cell types demonstrates that the inherent plasticity of adult stem cells is much broader than previously thought.

Source:

(1) Vicky Brower, "Embryonic Stem Cells May be Unnecessary," Reuters, June 29, 2000.
<http://neuroscience.about.com/science/neuroscience/library/pr/blpr000629a.htm>

- **Wall Street Journal** (April 13, 1999): Article cites scientists who argue that adult stem cells have the edge over embryo cells in battling disease. Researchers used to think that the potential for cellular regeneration was only present in embryos. But that belief is steadily eroding. Scientists at Osiris Therapeutics in Baltimore found stem cells in adult bone marrow that is capable of becoming bone, cartilage, or fat. This in addition to stem cells found in the liver, brain, and pancreas.

Source:

(1) Laura Johannes, "Stem Cells From Adults Have an Edge Battling Disease," *Wall Street Journal*, April 13, 1999.
<http://www.aegis.com/news.wsj/1999/wj99040.html>

(2) For related article, see Ricki Lewis, "Human Mesenchymal Stem Cells Differentiate in the Lab," *The Scientist* 13[8]:1, April 12, 1999.
http://www.the-scientist.com/yr1999/apr/lewis_pl_990412.html

- **Science** (February 25, 2000): Stem cells found in adults show surprising versatility. Conventional wisdom had assumed that once a cell was programmed to produce a particular tissue, its

fate was sealed, meaning it could not reprogram itself to make another tissue. But in the last year, a number of studies have surprised scientists by showing that stem cells from one tissue, such as the brain, could change into another, such as blood. Adult bone marrow stem cells may be even more versatile. While more research is needed, evidence is mounting that these findings are not aberrations, but may signal the unexpected power of adult stem cells.

Sources:

- (1) Gretchen Vogel, "Can Old Cells Learn New Tricks?" *Science*, February 25, 2000.

[Http://www.sciencemag.org](http://www.sciencemag.org)

- (2) See also a related article, Ihor Lemischka, "The Power of Stem Cells Reconsidered," *Proceedings of the National Academy of Sciences*, December 7, 1999.

<http://www.pnas.org/cgi/reprint/96/25/14193.pdf>

- **Science** (February 25, 2000): The list of tissues that differentiate from stem to progenitor to mature cells has increased from blood to include a variety of tissues, including both central and peripheral nervous systems and skeletal muscle. It is also possible that all organs and tissues still contain stem cells. Clinical stem cell transplantation could greatly add to the physician's ability to fight degenerative diseases.

Source:

- (1) Irving Weissman, "Translating Stem and Progenitor Cell Biology to the Clinic: Barriers and Opportunities," *Science*, Vol. 287, February 25, 2000.

<http://www.sciencemag.org>

2. Degenerative diseases of the eye:

- **New England Journal of Medicine** (July 13, 2000): Conditions such as Stevens-Johnson syndrome and chemical burns can severely compromise ocular surfaces of the eye and cause catastrophic vision loss. In this study, lab-grown corneas from adult stem cells reverse damage to the eye. The procedure has three steps: 1) Stem cells are removed from a healthy section of the limbus, a circular area on the eye's surface that surrounds the cornea; 2) the stem cells are placed on an amniotic membrane obtained from a donor mother after her baby is born; 3) The corneal stem cells grow into a layer much like the outer

surface of the cornea; 4) The damaged part of the cornea is removed and replaced with the lab-grown stem cells. Ten of the 14 patients in the study had their sight restored or experienced a significant improvement in vision.

Sources:

- (1) Ray Jui-Fang, *et al*, "Reconstruction of Damaged Corneas by Transplantation of Autologous Limbal Epithelial Cells," *New England Journal of Medicine*, Vol. 343, No. 2, July 13, 2000.
<http://www.nejm.org/content/2000/0343/0002/0086.asp>
- (2) Ivan Schwab and R. Isseroff, "Bioengineered Corneas—the Promise and the Challenge," *New England Journal of Medicine*, Vol. 343, No. 2, July 13, 2000.
<http://www.nejm.org/content/2000/0343/0002/0136.asp>
- (3) Susan Okie, "Tissue Grown in Lab Reverses Damage to Eye," *Washington Post*, July 13, 2000.
<http://washingtonpost.com/wp-dyn/articles/A31044-2000Jul12.html>
- (4) "Lab-Grown Cells Restore Sight: Experimental Technique Repair Scarred Corneas," MSNBC, July 12, 2000.
<http://www.msnbc.com/news/432037.asp>
- (5) "Lab-Grown Corneas Restore Sight," BBC News, July 10, 2000
http://news.bbc.co.uk/1/hi/english/health/newsid_827000/827728.stm

- ***New England Journal of Medicine*** (June 3, 1999): Adult corneal stem cells restore useful vision to patients who were legally blind. Transplants of these cells are used for those with severe ocular-surface disorders. One year after treatment, over half the patients had marked improvements in vision.

Sources:

- (1) K. Tsubota, *et al*, "Treatment of Severe Ocular-Surface Disorders with Corneal Epithelial Stem-Cell Transplantation," *New England Journal of Medicine*, Vol. 340, No. 22, June 3, 1999.
<http://www.nejm.org/content/1999/0340/0022/1697.asp>
 - (2) E. Holland and G. Schwartz, "Epithelial Stem-Cell Transplantation for Severe Ocular-Surface Disease," *New England Journal of Medicine*, Vol. 340, No. 22, June 3, 1999.
<http://www.nejm.org/content/1999/0340/0022/1752.asp>
- ***Science*** (March 17, 2000): Researchers at the University of Toronto have identified retinal stem cells in the adult mammalian eye, opening the door for retinal regeneration as a possible cure for damaged or diseased eyes. Previously,

scientists thought that only fish and amphibians contained retinal stem cells capable of regenerating and making new neurons. The stem cells were under inhibitory control while still in the eye, but proliferate once they are removed.

Sources:

- (1) Vincent Tropepe, *et al*, "Retinal Stem Cells in the Adult Mammalian Eye," *Science*, Vol. 287, March 17, 2000.
<http://www.sciencemag.org>
- (2) "Retinal Stem Cells in Adult Eye: Regeneration Possible?" *UniSci*, March 17, 2000.
<http://unisci.com/stories/20001/0317005.htm>

3. Diabetes and Liver disease

- ***Nature Medicine*** (March 2000): Researchers at the University of Florida reverse diabetes in mice using adult pancreatic stem cells. The pancreatic stem cells were taken from an adult donor and grown in culture, where they formed small functional organs known as islets of Langerhans (the insulin producing parts of the pancreas). When the cells were injected into the diabetic mice, they began secreting insulin. People with diabetes could one day undergo transplantation of pancreatic stem cells to provide them with a permanent source of insulin.

Sources:

- (1) Vijayakumar K. Ramiya, *et al*, "Reversal of Insulin-Dependent Diabetes Using Islets Generated in vitro from Pancreatic Stem Cells," *Nature Medicine*, Vol. 6, No. 3, March 2000.
<http://www.nature.com/cgiataf/DynaPage.taf?file=/nm/journal/v6/n3/abs/nm0300278.html>
- (2) Abi Berger, "Transplanted Pancreatic stem Cells can Reverse Diabetes in Mice," *British Medical Journal*, Vol. 320, March 18, 2000.
<http://www.bmj.com/cgi/reprint/320/7237/736/a.pdf>
- (3) Maggie Fox, "Diabetes Reversed in Mice with Stem Cells—Human Tests Next," Reuters, February 28, 2000.
<http://uk.news.yahoo.com/000229/1/a0wbk.html>
- (4) "Adult Stem Cells Reverse Diabetes in Mice," *Stem Cell Report*, June 2000.
<http://stemcellresearch.org/scr-june2000.htm>
- (5) "Insulin-Producing Cells Grown From Stem Cells," Reuters Health, February 28, 2000.
<http://www.diabetes.com/news/20000228-3419.html>

- **Science** (May 14, 1999): Bone marrow stem cells are manipulated to divide and produce liver cells, giving hope to patients with fulminant hepatic failure (a condition where the liver is unable to repair itself). The new cells could also help alleviate other diseases of the liver and decrease the need for liver transplants. Researchers conclude that: “The BM-derived cells add to the growing body of evidence suggesting that cells in the adult organism have a remarkable degree of plasticity.”

Sources:

- (1) B.E. Petersen, *et al*, “Bone Marrow as a Potential Source of Hepatic Oval Cells.” *Science*, Vol. 284, May 14 1999.
<http://www.sciencemag.org/cgi/content/abstract/284/5417/1168?maxtosh.../199>
- (2) Hannah Vick, “Embryonic Stem Cell Research: Ethically Wrong Treatment of the Tiniest Humans, CWA, May 2000.
http://www.cwfa.org/library/life/2000-05_pp_stem-cell.shtml

- **Nature** (July 20, 2000): Scientists in Great Britain show how adult stem cells from the patient’s own transplanted bone marrow can turn into liver tissue. Researchers argue that “Adult stem-cells offer great promise in medicine, as they may generate the full spectrum of cell types needed to repair a damaged organ.”

Sources:

- (1) Nicholas Wright, *et al*, “Cell Differentiation: Hepatocytes from Non-Hepatic Adult Stem Cells,” *Nature*, July 20, 2000.
http://www.nature.com/cgi/taf/DynaPage.taf?file=/nature/journal/v406/n6793/abs/406257a0_fs.html
- (2) David Whitehouse, “Stem Cells Promise Liver Repair,” BBC News, July 19, 2000.
http://news.bbc.co.uk/1/hi/english/sci/tech/newsid_841000/841932.stm
- (3) Bill Rosato, “British Scientists Make Liver Cell Breakthrough,” Reuters, July 19, 2000.
<http://www.britannica.com/bcom/reuters/article/print/0,6183,61582,00.html>
- (4) See related story, Patrick Goodenough, “New Research May Offer Ethical Alternative to Embryonic Cloning,” CNS News, August 4, 2000.
<http://www.cnsnews.com/ViewCulture.asp?Page=\ForeignBureaus\archive\For20000804c.html>

4. Cancer, blood, and immune disorders

- **Doctor's Guide** (March 27, 1997): Cord blood stem cells (taken from the umbilical cord after the infant is born) has shown a remarkable ability to treat diseases like leukemia. Researchers insist that the blood remaining in the umbilical cord and placenta following birth is a rich source of stem cells that can be used to treat a number of life-threatening diseases.

Sources:

- (1) "Umbilical Cord Blood Transplants May Have Significant Health Impact," *Doctor's Guide*, PSL Consulting Group, March 25, 1997.
<http://www.pslgroup.com/dg/219ce.htm>
- (2) "Cord Blood Stem-Cells Most Advantageous Starting Point for AHA Research," *Cord Blood Registry*, 1997.
<http://www.prolifeinfo.org>

- **New England Journal of Medicine** (November 26, 1998): Blood taken from newborn's umbilical cords appears to offer a good source of life saving tissue for cancer victims and others suffering from blood related diseases. Researchers concluded that placental blood is a useful source of allogenic hematopoietic stem cells for bone marrow reconstitution.

Sources:

- (1) "Pablo Rubinstein, "Outcomes Among 562 Recipients of Placental Blood Transplants from Unrelated Donors," *New England Journal of Medicine*, Vol. 339, No. 22, November 26, 1998.
<http://www.nejm.org/content/1998/0339/0022/1565.asp>
- (2) Robert Parkman, "The Future of Placental-Blood Transplantation," *New England Journal of Medicine*, Vol. 339, No. 22, November 26, 1998.
<http://www.nejm.org/content/1998/0339/0022/1628.asp>
- (3) Linda Johnson, "Study: Umbilical Cord Blood Provides Life-Saving Tissue for Cancer Victims," *Associated Press*, November 26, 1998.
http://ardmoreite.com/stories/112698/liv_umbil.shtml
- (4) For related story, see Roni Rabin, "Bloodline," *Long Island Newsday*, April 9, 1996.
<http://www.huntingtonscure.com/docs/newsbloodline.htm>

5. Bone marrow, muscle, and skeletal issues

- **Proceedings of the National Academy of Sciences** (December 7, 1999): Researchers from Baylor College of

Medicine show that cells derived from the muscle of adult mice can become mature cells of all major blood types, and not just muscle cells. After bone marrow transplantation, donor-derived cells were found in the liver, vascular endothelial cells, brain, skeletal muscle, and bone. Furthermore, the muscle cells retained their regenerative potential after bone marrow from one of the six mice was harvested and transplanted into secondary recipients. These findings, taken together with other recent studies, suggest that adult stem cells retain a previously unrecognized degree of plasticity in their commitment and that their differentiation may be influenced more by environment than by lineage.

Sources:

- (1) K. Jackson, *et al*, "Hematopoietic Potential of Stem Cells Isolated From Murine Skeletal Muscle," *Proceedings of the National Academy of Sciences*, Vol. 96, December 7, 1999.
<http://www.pnas.org/cgi/reprint/96/25/14482.pdf>
- (2) "Stem Cells not Bound to Become Any Cell Type," *UniSci*, December 7, 1999.
<http://unisci.com/stories/19994/1207995.htm>

- **Nature** (September 23, 1999): Transplanted bone marrow stem cells (in mice) show promise treating Muscular Dystrophy as well as other diseases where the systematic delivery of therapeutic stem cells to sites throughout the body is critical. The study suggests that the inherent developmental potential of stem cells taken from various tissues or organs may be more similar than previously anticipated. (In other words, these stem cells can grow various kinds of tissue, not just the ones they were taken from.) In the case of dystrophic mice, the introduced cells migrated to muscle, where they produced the missing dystrophin, restoring some function.

Sources:

- (1) E. Gussoni, *et al*, "Dystrophin Expression in the MDX Mouse Restored by Stem Cell Transplantation," *Nature*, September 23, 1999.
http://www.natureasia.com/get.pl5/abstracts/issue990923/abstract990923_390.shtml
- (2) Ricki Lewis, "A Paradigm Shift in Stem Cell Research?" *The Scientist* 14[5]:1, March 6, 2000.
http://www.the-scientist.com/yr2000/mar/lewis_p1_000306.html

- **Science** (April 2, 1999): Researchers at Osiris Therapeutics and the Johns Hopkins School of Medicine coaxed stem cells

from adult bone marrow to develop into cartilage, fat, and bone cells. Once transplanted, these stem cells differentiate into the type of tissue needed to repair injury or disease.

Sources:

- (1) Mark Pittenger, *et al*, "Multilineage Potential of Adult Human Mesenchymal Stem Cells," *Science*, Vol. 284, April 2, 1999.
<http://www.sciencemag.org/cgi/content/full/284/5411/143>
- (2) Ricki Lewis, "Human Mesenchymal Stem Cells Differentiate in the Lab," *The Scientist* 13[8]:1, April 12, 1999.
http://www.the-scientist.com/yr1999/apr/lewis_pl_990412.html

- ***Proceedings of the National Academy of Sciences*** (March 28, 2000): A new protocol developed with support from the National Institutes of Arthritis and Musculoskeletal and Skin Disease (NIAMS) has made it possible to obtain an almost unlimited number of stem cells from a small sample of adult bone marrow. These special type stem cells, variously referred to as mesenchymal, nonhematopoietic, or marrow stromal cells, have the ability to develop into bone cells, cartilage, fat, muscle, and nerve. The study penetrates a major barrier to using adult stem cells for gene therapy: obtaining an adequate supply of cells for transplantation. Dr. Prockop and his team were able to multiply human bone marrow stem cells a billion-fold in just six weeks. Now, cells needed for treating the patient are easily obtained from the same patient (via needle and syringe) and then genetically engineered so they grow rapidly in culture. Because the stem cells retain their potential for differentiation throughout the procedure, they are excellent for treating a number of skeletal diseases, including osteoporosis, muscular dystrophy, and osteoarthritis. They also have potential to treat nervous system disorders such as Parkinson's Disease and Alzheimer's Disease.

Sources:

- (1) Darwin Prockop, *et al*, "Rapid Expansion of Recycling stem Cells in Cultures of Plastic-Adherent Cells from Human Bone Marrow," *Proceedings of the National Academy of Sciences*, Vol. 97, March 28, 2000.
<http://www.pnas.org/cgi/reprint/97/7/3213.pdf>
- (2) "Unlimited Harvest of stem Cells from Bone Marrow Possible, Repots NIAMS Supported study," National Institute of Arthritis and Musculoskeletal and Skin Disease, *News*, April 2000.
<http://www.nih.gov/niams/news/spotlight/stemcells.htm>

- **Science** (January 22, 1999): Adult neural stem cells, which give rise to three main types of brain cells, can also become blood cells when transplanted into mice whose own blood-forming tissue, the bone marrow, has been destroyed. These neural stem cells can “shake their fates,” indicating their potential for differentiation is much greater than originally thought. The results also suggest that there is something quite powerful in the mature adult blood system that can instruct cells from a different origin what to do. Researchers hope transplanted neural cells can treat human blood cell disorders such as aplastic anemia and severe combined immunodeficiency.

Sources:

- (1) A. Vescovi, *et al*, “turning Brain Into Blood: A hematopoietic Fate Adopted by Adult Neural Stem Cells in Vivo,” *Science*, Vol. 283, January 22, 1999.
<http://www.sciencemag.org>
- (2) Evelyn Strauss, “Brain Stem Cells Show Their Potential,” *Science*, Vol. 283, January 22, 1999.
<http://www.sciencemag.org/cgi/content/summary/283/5401?maxtos.../199>
- (3) See related article, Paul Fontes and A. Thomson, “Stem Cell Technology,” *British Medical Journal*, November 13, 1999.
<http://www.bmj.com/cgi/content/full/319/7220/1308>

V. **Appendix: The Personhood of the Unborn as the Critical Issue in the Fetal Tissue Debate**

Summary of the defense for fetal and embryonic personhood:

- Human parents can only produce human offspring, hence the unborn are members of the human community.
- The functional differences between the fetus and the newborn are morally irrelevant.
- The unborn are human persons because they have a human nature, not because they perform certain functions.

For the past 27 years, pro-life advocates have argued that elective abortion takes the life of a defenseless human being. The rationale for that argument can be summarized in the following syllogism:

- 1) Intentionally killing an innocent human being is a moral wrong.
- 2) Elective abortion is the intentional killing of an innocent human being.
- 3) Hence, elective abortion is a serious moral wrong.

This simplifies the abortion debate. If pro-life advocates are correct about the humanity of the unborn, elective abortion is a clear moral wrong. If, on the other hand, abortion does not take the life of an innocent human being, it requires no more justification than having your tooth pulled.

In short, pro-life advocates argue that human life is a continuum beginning at conception and ending at natural death. You did not come from a zygote; you once *were* a zygote. You did not evolve from a fetus; you once *were* a fetus. This position is both scientifically and philosophically sound.

The pro-life position is scientifically sound.

There is no longer any doubt that individual human life begins at conception. Dr. Landrum Shettles, the first scientist to achieve conception in a test tube, writes that conception not only confers life, it "defines" life.⁴ Prior to his abortion advocacy, former Planned Parenthood President Dr. Alan Guttmacher was perplexed that anyone, much less a medical doctor, would question this. "This all seems so simple and evident that it is difficult to picture a time when it wasn't part of the common knowledge," he wrote in his book *Life in the Making*.⁵

Pro-life advocates consider their position scientifically sound for three reasons.

Reason #1: *The unborn entity is genetically distinct from its parents.* Unlike sperm and ovum, the zygote possesses the active (inherent) capacity to develop itself into an embryo, fetus, infant, child, and adult. True, sperm and egg are human cellular material, but left to themselves, they will never become a human being. But what the zygote needs to function as a self-integrating human organism it already has. Hence, what actually comes into existence at conception is *not* a "fertilized egg" (sperm and ovum cease to be at conception) or a mere clump of human cells, but a distinct, unified, self-integrating human organism. All genetic material needed to drive the unborn's development is there.

That is to say, at no point does the distinct organism that came into being undergo a "substantial change" or change of nature. It is human and will remain so. It is an *immature* human, as is an infant, but a

⁴ Landrum Shettles, *Rites of Life* (Grand Rapids: Zondervan, 1983) p. 37.

⁵ A. Guttmacher, *Life in the Making: The Story of Human Procreation* (New York: Viking Press, 1933) p. 3. Cited in Robert Marshall and Charles Donovan, *Blessed Are the Barren: The Social Policy of Planned Parenthood* (San Francisco: 1991) pp. 294-5.

human being nonetheless. Living things do not become entirely different creatures in the process of changing their form. Rather, they develop according to a certain physical pattern precisely because of the kind of being they already are.

The unborn, therefore, is not a potential human, but a human with great potential.⁶ It is a potential teenager, adult, and perhaps a lawyer. But it is not a potential human. Living things do not change from one kind of being into another over time. They only change their form. What they are stays the same.⁷

Reason #2: *The unborn entity has human parents.* The law of biogenesis states that each living thing reproduces after its own kind.⁸ That is to say, dogs beget dogs, cats beget cats, frogs beget frogs, etc. To find out what something is, simply ask, "What are its parents?" According to the law of biogenesis, human parents can *only* produce human offspring.

If you reject the scientific evidence I have presented for the humanity of the unborn, you must explain two things. First, you must say what the unborn entity *actually* is. It is not enough to say that it is potential life. Potential does not exist in the abstract. A potential X must be an actual Y. So what is the unborn actually? A dog? A fish? A frog? An amphibian?

Furthermore, you must explain how two human beings can create a separate being that is *not* human—in clear violation of the law of biogenesis—but later becomes one.

Reason #3: *Although the unborn's humanity does not depend on its level of development, its rapid growth does point to its status as a genetically complete, self-integrating organism.* In fact, prenatal development is so explosive that by day 43, the unborn entity has a heart that is beating and brain wave activity we can measure on an electroencephalogram.⁹ By the end of the second month, the neurological structures necessary for pain sensation are present, as Dr. Vincent J. Collins of Northwestern University Medical School points

⁶ Beckwith, *Politically Correct Death*, p. 94.

⁷ Koukl, *Precious Unborn Human Persons*, p. 14.

⁸ *Ibid*, p. 16.

⁹ Heart--K.L. Moore, *Before we are Born* (Philadelphia: W.B. Saunders Company, 1989) pp. 52; 204; B. Pansky, *Review of Medical Embryology* (New York: Macmillan, 1982) p. 302. Brain--H. Hamlin, "Life or Death by EEG," *Journal of the American Medical Association*, October 12, 1964.

out.¹⁰ Dr. Collins, author of the medical teaching text *Principles of Anesthesiology*, argues that the unborn may experience pain as early as nine weeks, but certainly by 13 weeks. To come to the point, it's no exaggeration to say that abortion not only kills babies, it tortures babies.

Abortionist Dr. Warren Hern says it well: "The sensations of dismemberment flow through the forceps like an electric current" during a D&E abortion.¹¹

The pro-life position is philosophically sound.

It is true the unborn differs from the newborn, but are those differences morally relevant? That is to say, are they significant in the way abortion advocates need them to be?

The unborn differs from the newborn in four ways, none of which are relevant to its status as a human person. Those four ways are size, level of development, environment, and degree of dependency. The acronym **SLED** is a helpful reminder of those differences:¹²

- **S**ize: The unborn are smaller than newborns, but when has size had anything to do with the rights that people have? Men are generally larger than women; does that mean they deserve more rights? Is Shaquell O'Neal more of a person than feminist Gloria Steinem simply because he is larger? Clearly size is not the issue.
- **L**evel of development: True, the unborn are less developed than newborns, but this too is morally irrelevant. A newborn for that matter is less developed than a toddler. A toddler is less developed than an adolescent. An adolescent is less developed than an adult. But we speak of all as equally human. Is a child of four, for example, less of a person because she has not yet developed sexually? Should we kill a retarded child whose brain function is less than that of a newborn? These absurd conclusions follow from defining persons based on what they can *do* rather than what they *are*. To cite another example, if robots could do all that persons can do behaviorally, they still would not be persons. And if personhood is only a developing, gradual thing, then we are never fully human because we continue to grow intellectually and emotionally. As Albert Schweitzer said at age 70, "I still don't know

¹⁰ Vincent J. Collins, "Fetal Pain and Abortion: the Medical Evidence," *Studies in Law and Medicine* (Chicago: Americans United for Life, 1984) pp. 6-7. See also *JAMA* in footnote #18.

¹¹ W. Hern and B. Corrigan, "What About Us? Staff Reactions to D&E." Paper presented at the 1978 meeting of the Association of Planned Parenthood Physicians, San Diego, CA., October 26.

¹² Stephen Schwarz, *The Moral Question of Abortion* (Chicago: Loyola University Press, 1990) p. 15.

what I want to do when I grow up." It follows, then, that the ability to perform human functions is not a necessary condition for human personhood. Rather, a person is one with the natural, inherent capacity to give rise to personal acts--even if she lacks the current ability to perform those acts. People who are unconscious do not have the present capacity to perform personal acts. We don't kill them because of it. Nor should we kill the unborn.

- **E**nvironment: True, the unborn is located in a different place, but how does a change in location suddenly change a non-human entity into a human one? Did you stop being human when you walked from your house to the car? From the kitchen to the den? Clearly, *where* one is has no bearing on *who* one is.¹³ A child in the incubator of her mother's womb is no less a child than the one being sustained by neonatal technology. I know, for example, of a baby girl named Rachel who was born at 22 weeks gestation.¹⁴ (That is not even six months into the pregnancy.) At the time of her birth, she weighed less than a pound and could fit into the palm of your hand. The hospital staff worked heroically to save her life and now she is a healthy toddler. But let's assume that instead of saving baby Rachel's life at 22 weeks, the doctor came into her room and killed her while she was resting in her father's hand. We would consider that an outrage, wouldn't we? But do you know that the same baby Rachel, *that very same baby girl*, can be killed through legalized abortion through all nine months of pregnancy simply because she is located six inches away in her mother's womb? Ladies and gentlemen, you do not stop being human simply because you have a different address.
- **D**egree of dependency: If viability is what makes one human, then all those dependent on kidney machines, heart pace-makers, and insulin would have to be declared non-persons. There is no ethical difference between an unborn child who is plugged into and dependent upon its mother and a kidney patient who is plugged into and dependent upon a kidney machine.¹⁵ Siamese twins do not forfeit their right to live simply because they depend on each other's circulatory systems.

We can see, then, that the unborn child differs from a newborn child in only four ways--size, level of development, environment, and degree of

¹³ Francis J. Beckwith, *Politically Correct Death: Answering Arguments for Abortion Rights* (Grand Rapids: Baker, 1993) p. 114.

¹⁴ Koukl, *Precious Unborn Human Persons*, pp. 19-21.

¹⁵ Bernard Nathanson, *Aborting America* (Garden City, NY: Doubleday, 1979) p. 213.

dependency--and none of those differences are good reasons for disqualifying it as fully human.

Objection: The embryo is not a human person because it cannot function as one.

Abortion advocates like Professor Mary Anne Warren claim that a "person" is a living entity with feelings, self-awareness, consciousness, and the ability to interact with his or her environment. Because embryos and fetuses have none of these capabilities, they cannot be fully human.¹⁶ Warren takes these criteria for personhood as givens, without any attempt to say *why* a person must possess these traits. In so doing, she espouses a doctrine known as *functionalism*: the belief that what defines human persons is what they can and cannot do. Functionalism, however, is seriously flawed because it fails to make a number of critical distinctions and results in savage inequality.

1) ***One can fail to function as a person and yet still be a person.*** People under anesthesia or in a deep sleep cannot feel pain, are not self-aware, and cannot reason. Neither can those in reversible comas. But we do not call into question their humanity because we recognize that although they cannot *function* as persons, they still have the *being* of persons, which is the essential thing.

Here is the key question: How many functions can I lose and still be myself?¹⁷ If I lose my sight, am I still me? If my legs and arms are lost, am I still me? If I cannot speak or hear, am I still me? What if I can no longer play chess or think critically? What if my IQ is less than 50? Wouldn't I still be a person with value?

Do I lose my personal identity simply because I cannot do everything you can? Do I lose the right to live because I am helpless and dependent? Do stronger, more capable people have more rights than others?

The answer is obviously no. No physical change or loss of function will cause you to cease being you *unless that change ends your life*. When a living thing like the unborn human comes into being, it remains what it is regardless of the shape of its body or present capabilities.

2) ***One must be a person in order to function as one.*** Non-sentient frogs do not become persons simply by acquiring sentience (the ability

¹⁶ Mary Anne Warren, pp. 102-119.

¹⁷ The material in these three paragraphs is adapted from Koukl, *Precious Unborn Human Persons*, p. 23.

to feel pain, etc.). Nor do robots become persons by assembling cars or loading freight. Rather, a person is one with the natural, inherent capacity to perform personal acts, even if that capacity is currently unrealized. One grows in the ability to perform personal acts only because one already is the kind of thing that grows into the ability to perform personal acts, i.e., a person.¹⁸ My thoughts and my feelings, indeed all of my functional abilities, cannot exist unless I first exist. I can exist without them, but they cannot exist without me.

3) ***The rights of individuals in our society are not based on their current (actual) capacities, but on their inherent capacities.*** This sounds complex, but we make this distinction all the time. For example, no one doubts that newborn humans have fewer actual capacities than do day-old calves.¹⁹ Baby humans are rather unimpressive in terms of environmental awareness, mobility, etc. Yet this does not lead us to believe that the calf belongs in the nursery while the infant can be left in the barn. To the contrary, we understand that although the infant currently lacks many functional abilities, it nonetheless has the inherent capacity to function as a person. But if individual rights are grounded in one's current capacities, calves should enjoy a greater moral status than do newborns.

People who are unconscious cannot presently function as persons, but they still have the inherent capacity to perform personal acts. That is why we do not kill them. From the moment of conception, the unborn human has the natural, inherent capacity to function as a person. What he lacks is the current capacity to do so. That he cannot yet speak, reason, or perform personal acts means only that he cannot yet function as a person, not that he lacks the essential being of a person.

This same emphasis on inherent (as opposed to actual) capacity is underscored in the accepted bio-ethical criteria for brain death. Say, for example, you have an automobile accident that leaves you in a coma. Some of your friends think your quality of life is gone and want to unplug life support. Others, like your parents, rally to stop them. What should be done?

The law in this case is very specific. According to the Uniform Determination of Death Act written into the health and safety codes of each state, the deciding factor is not your current state of brain function, but your inherent state of brain function. For death to occur, there must be an *"irreversible"* cessation of all functions of the entire

¹⁸ Peter Kreeft, "Human Personhood," *ALL About Issues*, January-February, 1992, p. 29.

¹⁹ Example provided by Beckwith, in *Politically Correct Death*, p. 110.

brain, including the brain stem."²⁰ Hence, the reversibly comatose are never classified as "non-persons" under our existing legal system despite their current lack of brain function.

Again, from the moment of conception the unborn entity has the inherent capacity to have a functioning brain. What it lacks is the current capacity. Hence, there is no ethical difference between it and the reversibly comatose, the momentarily unconscious, etc., who enjoy the protection of law despite their current inability to function as persons.

4) **Functionalism results in savage inequality.** It is one thing to say that critical thinking distinguishes us as human persons. It is quite another to say that your right to live depends on how intelligent you are. Yet, if rationality and self-consciousness define the morally significant person, then why shouldn't greater rationality make you more of a person? Consequently, the intellectually and artistically gifted would be free to maximize their pleasure at the expense of those less intelligent. Furthermore, if the functionalist is correct, personhood could be expressed by a bell curve in which human beings move toward full personhood in their early years, reach full personhood during their middle years (when they reach their intellectual peaks), then gradually lose personhood as they age. Presumably, your rights as a person would increase, stabilize, and then decrease in the process.

But then we are not far from that now. Last year, an attorney I debated at a secular university argued that until the 32nd week of pregnancy, the unborn's brain resembles a fish or amphibian in its evolutionary development. Therefore, the unborn are not fully human until the final stages of pregnancy.²¹

In one sense, his argument was nothing new. Darwin and his followers used it a century ago to dehumanize women. Their contention was that women were biologically and intellectually inferior because their brains were less developed than a man's. In *The Descent of Man in Relation to Sex*, Darwin wrote:

[Man] attains a higher eminence, in whatever he takes up, than can women--whether requiring deep thought, reason, or imagination, or merely the use of the senses and hands. If two lists were made of

²⁰ *California Health and Safety Code*, sec. 7180, Uniform Determination of Death Act. Emphasis added.

²¹ Arthur Ide makes essentially this same argument in *Abortion Handbook: the History, Legal Progress, Practice and Psychology of Abortion* (Las Colinas: The Liberal Press, 1986) pp. 21-26. See also, Carl Sagan and Ann Druyan, "Is it Possible to be Pro-Life and Pro-Choice?" *Parade Magazine*, April 12, 1990.

the most eminent men and women in poetry, history, painting, sculpture, music (inclusive of both composition and performance), history, science, and philosophy, the two lists would not bear comparison. We may also infer, from the law of the deviation from averages... [that] the average mental power in man must be above that of women.²²

If that weren't bad enough, prominent paleontologist Stephen Jay Gould quotes Darwin disciple and father of social psychology Gustave Le Bon as follows:

[Even in] the most intelligent races [there] are large numbers of women whose brains are closer in size to those of gorillas than to the most developed male brains. This inferiority is so obvious that no one can contest it for a moment; only its degree is worth discussion....Women represent the most inferior forms of human evolution and...are closer to children and savages than to an adult, civilized man. They excel in fickleness, inconstancy, absence of thought and logic, and incapacity to reason. Without a doubt, there exists some distinguished women, very superior to the average man, but they are as exceptional as the birth of any monstrosity, as for example, of a gorilla with two heads. Consequently, we may neglect them entirely.²³

Put simply, we used to discriminate on the basis of skin color and gender, but now we discriminate on the basis of brain development and intelligence. We've simply exchanged one form of discrimination for another.

5) ***Those who espouse functionalism equivocate on the question of personal identity.*** Is Scott Klusendorf the fetus or newborn identical to Scott Klusendorf the adult pro-life apologist? Is he the same person though his body has changed over time? According to Peter Singer, philosophy professor at Princeton University and outspoken defender of infanticide, the answer is no. "When we kill a newborn, there is no person whose life has begun. When I think of myself as the person I am now, I realize that I did not come into existence until sometime after my birth."²⁴ But as Paul Cox and Scott Rae point out, "If *I* do not exist until sometime after *my* birth, in what sense is the birth *mine*? The only way for '*my* birth' to be more than a linguistic convention is to admit that '*I*' existed before I was born, or at

²² Charles Darwin, *The Descent of Man in Relation to Sex* (New York: D. Appleton & Co., 1896) p. 564.

²³ Cited in Stephen Jay Gould, *The Mismeasure of Man* (New York: Norton, 1981) pp. 104-105.

²⁴ H. Kuhse and Peter Singer, *Should the Baby Live?* (New York: Oxford University Press, 1985) p. 133

least at the time of my birth.”²⁵ But if this is true, Singer’s attempt to define personhood in functional terms not only fails, it disqualifies many human beings as persons. Consider the person under general anesthesia. Like the early fetus, he currently is not conscious and has no concept of himself existing over time. According to the functionalist view, he is not a person. But this is absurd.

One might object that unlike the fetus and the newborn, the person under anesthesia *once did* function as a self-aware entity. Therefore, he is still a person (i.e. retains his identity) though he currently cannot function as one. But this objection is flawed, for it admits that something other than self-awareness defines personhood. For to claim that a human person can be functionally self-aware, become non-self aware, and then return a state of self-awareness assumes there is some underlying personal unity to this individual that allows him to maintain his identity while unconscious (i.e. while he is unable to function as a person). If not, then we must make the bizarre claim that a new person pops into existence once the anesthesia wears off.

As Cox and Rae explain, the reason Scott Klusendorf the embryo/fetus is identical to Scott Klusendorf the adult is that I possess a human nature (or essence) that not only makes certain functions (abilities) possible, it allows me to retain my personal identity through change.²⁶ For example, I may lose the ability to think critically, but as long as I am still alive, I remain myself because I have a human nature. Hence, it is the underlying essence of a thing, not its functional abilities, that determines what it is.

Consider an illustration provided by Francis Beckwith.²⁷ Suppose your Uncle Jed is in a coma after a terrible car accident. Imagine that he remains in that state (where he cannot function as a self-aware person) for two years and then awakens. Is Uncle Jed before the coma identical to Uncle Jed after? Is he the same person? Could doctors have killed him during his extended sleep because he was not functioning as one? If Singer holds to the functional view of human persons, it would be difficult to say why it would be wrong to kill Uncle Jed while he is comatose. Yet clearly, it would be morally wrong to kill him while in that state because although he cannot currently function as a person, he still has the inherent capacity to do so.

²⁵ Scott Rae and Paul Cox, *Bio-Ethics: A Christian Perspective in a Pluralistic Age* (Grand Rapids: Eerdmans, 1999) p.169.

²⁶ Rae and Cox, pp. 159-169.

²⁷ Francis Beckwith, *Abortion and the Sanctity of Human Life* (Joplin: MO: College Press, 2000) p. 73

Suppose you were to conclude that Uncle Jed is a person during the coma because, unlike the fetus, he *once* functioned as one and probably will again after he wakes up. But this objection fails, as Beckwith explains:

We can change the story a bit and say that when Uncle Jed awakens from the coma he loses nearly all his memories and knowledge including his ability to speak a language, engage in rational thought, and have a self-concept. He would then be in the exact same state as the standard fetus, for he would have the same capacities as the fetus. He would still literally be the same person he was before the coma, but would be more like he was before he had a “past.” He would have the natural inherent capacity to speak a language, engage in rational thought, and have a self-concept, but he would have to develop and learn them all over again in order for these capacities to result, as they did before, in actual abilities.²⁸

Perhaps the abortion advocate would bite the bullet and say that there is no human nature that allows me to maintain my identity through bodily change and that personal identity is nothing more than a string of psychological experiences connected by memory. Hence, Uncle Jed before the coma is not identical to Uncle Jed after, but is a new person with new memories that we will call Uncle Jed(b). But this denial of human nature will not do. What if five years later Uncle Jed(b) suddenly regains his lost memories? Is there now another Uncle Jed(c) or are we back to Uncle Jed(a)?

Put simply, Uncle Jed before the coma is identical to Uncle Jed after. He is the same person. The only difference is one of *function* (ability), not *essence* or nature. The same is true of Scott Klusendorf the fetus and Scott Klusendorf the adult. My abilities and my body have changed as I’ve developed, but I am identical to the fetus I once was because I have a human nature that allows me to maintain my identity through time and change. That human nature is present from the moment I begin to exist. If I am wrong about this, then you are literally not the same person you were five years ago when your body was made up of different physical stuff. Sure, you have changed, but it is *you* who changed. Your thoughts and memories cannot exist unless *you* first exist. You can exist without them (as in the case of Uncle Jed), but they cannot exist without you. Consequently, you are a human person because you possess a human nature, not because you functioned a certain way in the past. From conception forward, the

²⁸ Ibid, p. 74.

unborn possess that same human nature regardless of their current functional abilities.

Imagine the case of newborn twins named Bill and Hillary, each born unconscious.²⁹ One month after birth, Hillary briefly attains self-awareness, but then lapses back into a coma from which she will emerge nine months later. Bill, meanwhile, never gains consciousness, though he too will emerge from the coma at the same moment as Hillary. Suppose it is one day before both will wake up. Would anyone in his right mind say it is morally permissible to kill Bill but not Hillary? The only difference between the two is functional: Hillary briefly attained self-awareness in the past, Bill did not. It doesn't follow from this, however, that they have different *natures* or that Hillary is a person while Bill is not.

The fact is that we *function* as persons because we *are* persons. Scott Klusendorf the fetus is identical to Scott Klusendorf the adult pro-life apologist because I have a human nature that grounds my personal identity in something that is not developmental. If not, then I am literally a different person than I was 20 minutes ago. Likewise, a fetus that lacks current functional ability is nonetheless a person because it has a human nature from the moment it begins to exist.

6) ***Functionalism assumes a “parts” view of human persons.*** In his quest to dehumanize fetuses and newborns, Singer ignores the all-important distinction between *substance* things and *property* things.³⁰ Living things are substances that maintain their identities through time while property things, such as cars and machinery, do not. A property thing, like my car, is nothing more than the sum total of its parts. Change the motor or replace a tire, you technically have a different vehicle. There is no internal nature (or essence) that orders its development and grounds its identity through change. Instead, it's a loose unity of parts designed externally to function in a certain way.

By contrast, a substance maintains its identity over time and change. What moves a puppy to maturity or fetus to an adult is not an external collection of parts, but an internal, defining nature or essence. As a substance develops, it does not become more of its kind, but matures according to its kind.³¹ It remains what it is from the moment it begins to exist. A puppy does not become more of a dog as it matures. Consequently, a substance functions in light of what it is and maintains

²⁹ Ibid, p. 74

³⁰ The material in this section adapted from Rae and Cox, *Bio-Ethics*, pp. 159-163.

³¹ Ibid, p. 161.

its identity even if its ultimate capacities (for example, the ability to bark) are never realized.

Put differently, a substance is an entity in which the whole is greater than the sum of its parts, and the whole contains the internal nature that gives it unity and cohesiveness. Substances maintain their identity through change, while property things do not. A substance will develop *accidental* properties (such as self-awareness, size, and physical structure) as it matures, but these properties are non-essential and can be changed without altering the nature of the thing itself. This is why a person can lose a body part and yet retain his personal identity through that change.

When Singer disqualifies a fetus from membership in the human community because it is not self-aware, he treats it as a property thing that changes its identity over time instead of substance thing that does not. True, there are functional differences between Peter Singer the fetus and Peter Singer the adult philosopher, but it does not follow from this that they are separate entities. Singer the fetus must first exist as a person in order to function as one.

Consider a man entering a room.³² He can enter it gradually, be in halfway, and then enter it fully. During all stages of entering, *the man must first exist in total to do the entering*. Likewise, in order to enter the class of human beings known as human persons, the man must exist as well. Someone cannot be in the process of becoming a human person, since one must first exist in order to enter any process. To sum up, we cannot say that the fetus becomes a person as it develops since it must first exist as a substance in order to do the developing.

Summary and Conclusion

I have argued both scientifically and philosophically that the unborn are members of the human family. Scientifically, the unborn come from human parents who, according to the law of biogenesis, can only produce human offspring. Philosophically, the differences between fetus and newborn are differences of function, not essence (or nature). The unborn human retains its identity as a person through time and change because it possesses a human nature. Consequently, destructive embryo research is a serious moral wrong. It strips the unborn human of its inherent dignity and treats it as a disposable instrument to be used for someone else's benefit. A decent and civilized society cannot tolerate such an act.

³² Illustration taken from J.P. Moreland and Scott Rae, *Body and Soul: Human Nature and the Crisis of Ethics* (Downers Grove: InterVarsity Press, 2000) p. 253.