

- riages) if the parents give informed consent
- *Adult Germ Cells* (pluripotent stem cells derived from testicular biopsy) – morally acceptable, assuming informed consent of the adult donor
- *Umbilical Cord Stem Cells*— morally acceptable, since the umbilical cord is no longer required once a baby has been delivered
- *Placentally-derived Stem Cells*— morally acceptable, since the afterbirth is no longer required once a baby has been delivered
- *Post-Natally Derived (Adult) Stem Cells* (e.g. stem cells from bone marrow or blood or fat from liposuction) — morally acceptable, assuming informed consent from the adult donor
- *De-Differentiation Strategies* (pluripotent stem cells derived from treating adult cells with chemicals or other bio-active substances to “back-differentiate” them towards a more primitive state) — morally acceptable as long as the de-differentiation procedure doesn’t go so far as to make a human embryo
- *Reprogramming Strategies* (pluripotent stem cells derived using a modified nuclear transfer technique, for example ANT-OAR) — morally acceptable as long as the reprogramming generates a distinctly non-embryonic entity, that is to say, a cell or group of cells that is not an organism, from which stem cells could be obtained.

Where the Successful Therapies Are Coming From Today

Many people imagine that, given the impassioned discussion and pervasive media pressure to use embryos, many sick human patients must have already benefited from embryonic stem cell therapies. It comes as a surprise to many people, then, to learn that all the human stem cell therapies developed to date have actually come from adult or umbilical cord stem cells — not embryonic stem cells. Such therapies range from using bone marrow stem cells in the treatment of heart attack victims, to using umbilical cord stem cells in the treatment of rare enzyme disorders like Krabbe’s leukodystrophy. It makes sense that

adult stem cells would prove effective in the clinic, since they already exist in our bodies in various locations where they comprise part of the natural repair mechanism for many tissues. They properly belong in the microenvironment of an adult body. Embryonic stem cells, by contrast, belong in the microenvironment of an early embryo, not in an adult body, where they tend to cause tumors and immune system reactions. As of the date of this publication, *NO therapies in humans have ever been successfully carried out using embryonic stem cells.* Yet the drumbeat to go after human embryos remains remarkably persistent, and the mythology surrounding patient treatments continues to expand unabated.

Conclusion – The Path of Ethical Science

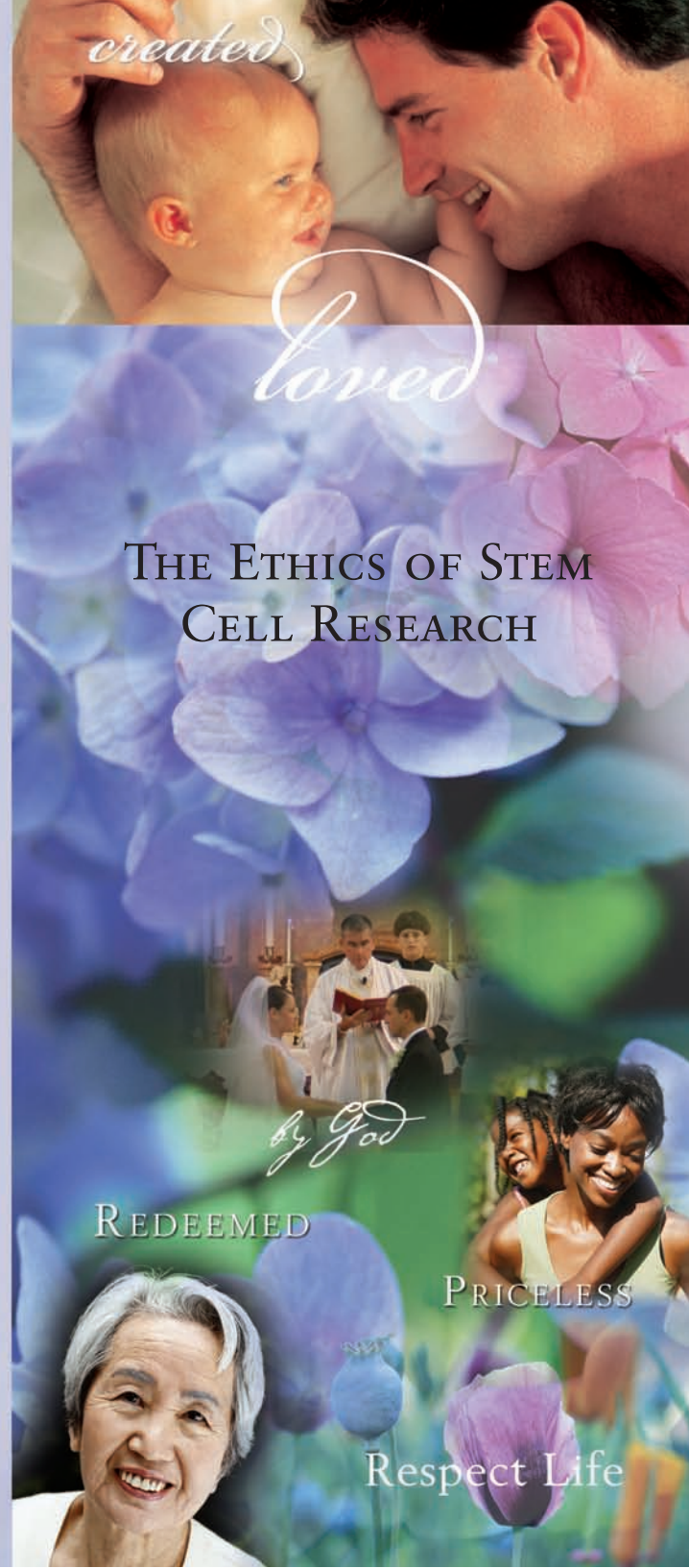
Until we take legal steps to assure that the powerful, the well-heeled, and the self-interested are not allowed to run roughshod over embryonic humans, we will never be worthy of the claim that ours is a civilized society. We stand at a critical moment in our national discussion about stem cells and biotechnology. We must chart a path toward a future in which the power of science is carefully ordered to serve and safeguard human life and human dignity. With God’s help we can benefit from the remarkable advances opened up by science if we face the moral concerns raised by these emerging technologies today, and choose to walk courageously and uncompromisingly along the right path, the path of ethical science.

Rev. Tadeusz Pacholczyk, Ph.D. is Director of Education of The National Catholic Bioethics Center



SECRETARIAT FOR PRO-LIFE ACTIVITIES

United States Conference of Catholic Bishops
 3211 Fourth Street, N.E. • Washington, DC 20017-1194
 Tel: (202) 541-3070 • Fax: (202) 541-3054
 Website: www.usccb.org/prolife



Advocates are quick to point out that stem cell research is about helping those who are living. This is not quite correct. Only *adult* stem cell research is about helping the living. *Embryonic* stem cell research is about destructively harming some of the living, in the name of helping others who may be struggling with diseases. To promote this particular research agenda, advocates will often seek to dehumanize embryos, suggesting that because they are so microscopic, and appear to be so very different from us, they *couldn't* really be one of us. Such argumentation stems from a basic error in understanding human biology.

Getting the Biology Right

Early embryos, it is true, are remarkably unfamiliar to us. They lack hands and feet. They don't have faces or eyes for us to look into. They look nothing like what we expect when we imagine a human being. Yet they are precisely as human as each of us. When we look at a scanning electron micrograph of a human embryo, a small cluster of cells, sitting on the point of a sewing pin, we do well to ask ourselves a simple question: "Isn't that exactly what a young human is *supposed* to look like?" The correct answer to that question doesn't depend on religion, revelation or theology, but only on embryology. Although we may be unaccustomed to seeing photomicrographs of embryos, we need to remind ourselves that what we are really viewing is a kind of family photo.

So while science makes it clear that human embryos are *human* beings, rather than cow, zebra or cat beings, religion and ethics step in *after* that fact, to ask: Is it correct that all human beings should be treated in the same way, or is it allowable to discriminate against some human beings in the interests of others?

Although it is a fundamental embryological truth that each of us was once an embryo, the

advocates of embryonic stem cell research are eager to portray human embryos as different from the rest of us, unable to make the grade, and hence fair game for destruction at the hands of those who themselves are no longer embryos. Recognizing the inviolability of human embryos really does not depend on religion at all, but rather on an accurate understanding of where each of us originated, and of the shared rights we all possess regardless of age, size, or state of dependency. Those rights are highlighted in the text of the Declaration of Independence, where it emphasizes that "... all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life ..."

An Example from the Animal Kingdom

Bald eagles, the living symbol of our national freedom, spirit, and pursuit of excellence, have protection by law from those who would kill or harm them. In the United States we have a stringent federal law, the Bald Eagle Protection Act, passed in 1940, that protects not only the national bird, the bald eagle, but also that bird's eggs. If you chanced upon some of those eggs in a nest out in the wilderness, it would be illegal for you to destroy them. If you did so, you would suffer the same penalties and sanctions as if you had shot the adult bird out of the air. By the force of law, we acknowledge the scientific truth that the eagle's egg (that is to say, the *embryonic eagle* inside that egg) is the same creature as the beautiful bird that we witness flying overhead. Therefore we pass laws to safeguard not only the adult but also the very youngest member of that species.

Even atheists can see how a bald eagle's eggs ought to be protected; it's not a religious question at all. If bald eagles are valuable (in this case, for pragmatic reasons of conservation), then it is right and fitting to protect them at all stages of their existence. The same logic holds for humans, who are valuable not for pragmatic

but for intrinsic reasons. It is rather striking how we are able to understand the importance of protecting the earliest stages of various forms of animal life, but when it comes to our own human life, we go through deceptive mental gymnastics to dissociate ourselves from our own humble embryonic origins. It is indeed a sad commentary on the moral confusion of our times that we readily protect embryonic animals, but are eager to offer up our own human embryonic brothers and sisters for dismemberment on the altar of stem cell sacrifice.

The Importance of Morally Acceptable Alternatives

Yet opposition to embryonic stem cell research should not be confused with opposition to stem cell research generally. Most types of stem cell research, in fact, are morally acceptable and laudable. We can all support many kinds of exciting and forward-looking avenues of stem cell research, like umbilical cord and adult stem cell research, with a clear conscience. New discoveries using a technique called de-differentiation promise new and more powerful stem cells obtained in morally acceptable ways. Ever more flexible (or "pluripotent") forms of adult stem cells are being discovered in various tissues and organs all the time. Our laws need to promote *these* kinds of stem cell research.

Current Types of Stem Cell Research: An Ethical Overview

- *Embryonic Stem Cells* (pluripotent stem cells harvested from living embryos which are 3-5 days old) — always morally objectionable, because a young human must be destroyed in order to harvest his or her stem cells
- *Embryonic Germ Cells* (pluripotent stem cells derived from germ cells [sperm or egg-producing cells] of fetuses) — morally objectionable when utilizing cells derived from elective abortions, but morally acceptable when utilizing cells from spontaneous abortions (miscar-