CHAPTER 10

Ethical Dilemmas in Stem Cell Therapy

We are at an unusual crossroads in modern medicine, a point at which the medical dictum *primum non nocere* (most importantly, do no harm), appears to some to come into conflict with hitherto undreamed of possibilities to cure some of the most debilitating and widespread medical conditions in modern society. Certain cells of the blastocyst-stage human embryos have been shown to be capable of unlimited growth in culture, and their ability to differentiate into any tissue of the body bodes well for their being a source of regenerative tissue for deteriorating organs.

Embryonic stem cell research and therapeutic cloning hold out the promise of medical treatments that could alleviate or even eliminate conditions including Parkinson’s and Alzheimer’s diseases, multiple sclerosis, diabetes, certain heart conditions, and traumatic spinal cord injury (National Institutes of Health 2000). Research universities, biotechnology companies, and medical institutions generally are anxious to push the field forward; the public at large has been more cautious as they slowly become aware of both the positive implications and potential hazards of the work. Does the destruction of a human embryo at the very earliest stages of development constitute harm that is morally unacceptable when weighed against the potentially monumental gains in the war against human suffering?

Embryonic stem (ES) cell research is only one sector of a larger field of stem cell research that is progressing rapidly, as described in Chapter 9. There are several ethical issues presented by the possibilities of stem cell therapy. One of the most critical problems involves the sources of stem cells. Should we pursue embryonic stem cell research, or limit our research to adult stem cells? Another issue concerns the economics of egg donation. In a technolo-
Research involving human pluripotent stem cells promises new treatments and possible cures for many debilitating diseases and injuries, including Parkinson's disease, diabetes, heart disease, multiple sclerosis, burns, and spinal cord injuries. The NIH believes the potential medical benefits of human pluripotent stem cell technology are compelling and worthy of pursuit in accordance with appropriate ethical standards.

NATIONAL INSTITUTES OF HEALTH (2000)

Sources of Embryonic Stem Cells

Some who support human embryonic stem cell research argue that because embryonic stem cells are isolated from an early-stage embryo, prior to any differentiation into organs, and because once isolated these cells are incapable of giving rise to an embryo, the moral issue of whether the embryo has acquired "personhood" is avoided. Some religions argue against using human embryos based on the belief that "personhood" begins at fertilization (see Chapter 2). However, some scientists see no moral dilemma at all.

In an editorial for the journal Science, Donald Kennedy of Stanford pointed out that "this well-advertised dilemma does not arise from a confrontation between science and ethical universals. Instead, the objections arise from a particular belief about what constitutes a human life: a belief held by certain religious and not by others." (Kennedy 2005)

Neither side argues that the human embryo is without value, and accompanying every argument is the dictum that the human embryo should always be afforded proper respect and never be commercialized or treated like a commodity. And even among supporters of human embryonic stem cell research, there is argument over what constitutes an acceptable source of embryos for this research. There are currently two identifiable embryo sources: embryos that are "left over" after in vitro fertilization (IVF) procedures, and embryos created solely for obtaining stem cells.

The numerous IVF clinics worldwide that help infertile couples conceive create more embryos than are ever implanted (see Chapter 4). The question arises, what should be done with the unused (supernumerary) embryos? These embryos are routinely frozen, and when the couple no longer has a use for them, they can either be donated to another hopeful parent or destroyed. To many, supernumerary embryos from IVF clinics constitute a suitable source of embryonic stem cells, since the intent behind their creation affords proper respect and does not risk objectifying the embryo as a source of material for commercial use.
Ethical review committees that have recommended this use of supernumerary IVF embryos advise specific guidelines to ensure proper respect for the embryo (National Institutes of Health 2000; European Group on Ethics 2002). It is recommended, for example, that the couple donating the embryos not be informed of this choice until after they have decided to have the embryos discarded and that no money be given the couple donating the embryos so as to avoid possible coercion of the poor.

Some researchers argue that the unused embryos from IVF will not provide a broad enough range of genetic types for stem cell research or therapy. In this argument, the only way to ensure a broad range of genetic types is to allow the creation of embryos specifically for the isolation of human embryonic stem cells.

The embryonic stem cells used in therapeutic cloning must come from an embryo created solely as a source of these cells. As detailed in Chapter 9, therapeutic cloning inserts the nucleus from a differentiated somatic cell taken from the patient into a donor's egg cell that has had its nucleus (and thus its genome) removed. The fused egg is then stimulated to divide in culture. When the embryo had been cultured to the blastocyst stage (approximately 5 days; see Figure 1.4), the cells of the inner cell mass are removed and cultured to create a population of stem cells. These stem cells might then be induced to form the specific tissue needed for transplantation by adding exogenous inducers (see pages 147–149). In therapeutic cloning, tissues, not people, are the intended result. Research on the specific inducers and culture conditions needed to cause the differentiation of specific tissue types is still in its infancy but is advancing rapidly (see Wasserman and Keller 2003).

Those who argue in favor of therapeutic cloning point out that the embryo is not being created for implantation, besides which its viability as an embryo is already severely compromised because its nucleus was transferred from an already differentiated cell (see Lanza and Rosenthal 2004). One argument holds that, because babies are never intended to arise from these embryos, their destruction is not objectionable. Paul McHugh of the President's Council on Bioethics coined the term "clonote" to be distinct from the term zygote. He asserts that clonotes are "manufactured rather than begotten"; they are meant for research not reproduction, and it is therefore not immoral to kill them. Rudolph Jaenisch, a pioneer of cloning research, also upholds this position and states that in his opinion, "the destruction of a cloned embryo to make embryonic stem cells poses less ethical problems than the destruction of frozen embryos in the IVF clinic" (Hall 2004).

Those who argue against therapeutic cloning point out that knowledge gained in this field will advance the field of reproductive cloning, increasing the likelihood of a successful attempt at human reproductive cloning, which the vast majority of people consider to be unacceptable (see Chapter 8). For those who are against using human embryos for therapeutic use based on the belief that human life begins at the moment of conception,
therapeutic cloning poses a confusing dilemma, since by not involving the
joining of an egg and sperm, conception technically never takes place. To
date, most ethics committees deem that therapeutic cloning still poses too
great a risk and advise that research proceed using supernumerary IVF
embryos to create human embryonic stem cell lines so that the safety and
effectiveness of the procedures can be evaluated (National Bioethics Advi-
sory Commission 1999; Commission of the European Communities 2003).

One question that can be asked is whether a cloned embryos would be a
more acceptable source of stem cells if the genetic material were first modi-

fied in such a way that the embryo could only give rise to stem cells—that is, even if the embryo were to be implanted it would not develop into a
fetus. Research on mice indicates that such a thing may be possible.

A recent proposal (2004) by William Hurbut, a member of the Presi-
dent’s Council on Bioethics, seeks to create human stem cell lines from
human embryos that lack the CDX2 gene. His suggestion is based on the
fact that the mouse Cdx2 gene is essential for development of the tro-
phoblast, and the embryo cannot develop beyond the blastocyst stage with-
out it. However, Cdx2-deficient embryos can still generate embryonic stem
cells from the inner cell mass (Chawengsaksophak et al. 2004). If humans in
fact developed in the same way, then such cells would be able to be used
for human embryonic stem cells, but would not be able to form a human if
transplanted into a uterus.

However, biologist Douglas Melton and his colleagues have pointed out
that we don’t actually know the functions of the CDX2 gene in humans,
and to find out, we would have to experiment on human embryos. More-
over, they note that even in the mouse, the Cdx2 gene has several functions,
and it also is working in the mouse embryo itself. They argue that there is
“no basis for concluding that the action of CDX2 (or indeed any other gene)
represents a transition point at which a human embryo acquires moral sta-
tus” (Melton et al. 2004).

Another possible source for embryonic stem cells was discovered by a
small biotech company in Massachusetts, Advanced Cell Technology
(ACT). In 1998, ACT announced that they had fused human nuclei with
enucleated cow oocytes and that these hybrid cells had divided in culture,
making them a potential source of human embryonic stem cells (Marshall
1998). This announcement raised a number of fears, including the vision of
research labs creating viable human/non-human chimeras. The idea

*By the conventions of gene nomenclature, human genes are designated with all capital let-
ters; mouse genes are written with only the initial letter capitalized. Thus CDX2 and Cdx2
are homologous genes found in humans and mice, respectively.

1 A chimera is an organism that contains cells with different genetic constitutions (as com-
pared to a normal organism, in which every cell in the body has the same genetic constitu-
tion). The term is drawn from Greek mythology, where it referred to a beast with a lion’s
head, a goat’s body, and a serpent’s tail.
offends the moral sensitivities of many, but there are those who support it as a method of obtaining human embryonic stem cells that would avoid many legal and ethical constraints. "Is there anything morally wrong with such research, if these cells are derived from somatic cells and never develop into embryos," asks Julian Savulescu, Director of the bioethics program at the University of Melbourne. "We now produce human proteins from human DNA inserted into animals. There does not seem anything objectionable about that. But if we can produce proteins in this way, why not blood cells?" (Savulescu 2000)

One of the dangers of using any non-human source of material, however, is the possible transfer of viruses across species. At present, most government agencies do not support any work that combines human nuclei with non-human oocytes (National Bioethics Advisory Commission 1999; Commission of the European Communities 2003). And since any such cells would have bovine mitochondria (because mitochondria are present in the egg cytoplasm, not in the nucleus), it is doubtful that any government agency would allow embryos generated with such eggs to be transplanted into humans.

**Oocyte Donations**

One of the moral issues raised by human embryonic stem cell research is that so many enucleated eggs are needed for such studies, and the collection of these poses unfair risks to women. During the egg collection procedure, a woman is given hormones to induce superovulation so that a large number of oocytes can be collected at one time. Among other risks (including cancer) associated with such therapy is the risk of a potentially life-threatening condition called ovarian hyperstimulation syndrome (see page 74). A mild form of this syndrome appears as a side effect in about 5 percent of all women who undergo ovarian hyperstimulation; 1–2 percent develop a severe, life-threatening form of the syndrome that can lead to kidney and lung failure, shock, or rupture of the ovary (Magee 2003).

In addition to the physical dangers, many people are concerned that poor women will be pressured into selling their oocytes to commercial suppliers. There are already cases (well documented in India; see, e.g., Jha 2004) where the very poor have sold organs such as their kidneys, undergoing major surgery and potential life-threatening complications to provide organs for wealthy recipients, in return for which the donors receive what are usually insultingly small amounts of money. Opponents feel that the projected need for vast numbers of eggs in stem cell research would open the door to exploitation of poor women.

Two recent discoveries may reduce the need for donor oocytes needed to be obtained from women. First, the number of oocytes needed to initiate stem cell lines may be significantly less than the number needed to establish viable cloned animals. Using freshly harvested oocytes from
young women (rather than oocytes left over from fertility treatments), the South Korean laboratory of Hwang Woo-suk found that they could obtain stem cell lines from clones with transplanted nuclei with a success rate of 1 in 20 (Hwang et al. 2005). This is tenfold more efficient than previous attempts. In 9 of 11 attempts using fresh oocytes, stem cell lines from patient’s nuclei succeeded with only a single donation.

Second, embryonic stem cells were shown to routinely form oocytes in culture and organize the cells around them into follicle cells, enabling the oocytes to mature normally (Hubner et al. 2003). Oocytes derived from embryonic stem cells rather than women’s ovaries might therefore become a source of human oocytes for stem cell research. Ironically, this study raises other ethical issues about stem cells (Gilbert 2003): if they can produce normal oocytes, are they then totipotent rather than merely pluripotent, and if so, does a stem cell represent incipient life in the same way a zygote does? Could they or should they ever be used to create a viable embryo?

**Life Extension and Age Retardation**

The overriding objection of many people to embryonic stem cell research is their sense that it destroys a very early human life. One of the most profound issues raised by these potential therapies, however, has to do with the other extreme of life—senescence and death. What if stem cell therapy actually worked? What if it were so cheap and effective that if your heart cells needed repair, a simple trip to your physician’s office or local hospital would be all you needed?

There have generally been two biological assumptions that could be made about our society. One is that the number of males and females born is relatively equal. The second is that nobody lives productive lives past the century mark. We are not in the position to change the first assumption (see Chapters 5 and 6), and we may soon be in a position to change the second.

“Life extension” refers to increasing the number of years a person remains alive, and “age retardation” means slowing down the processes of senescence (the loss of mental and physical function as one gets older). Stem cells have the potential to do both. The staff of the President’s Council on Bioethics has put forth a discussion paper that identified several possible outcomes of extending the healthy, productive lifespan. First, if knowledge of death gives our lives urgency and meaning, would a life removed from such considerations be less committed? Would we still want children? Indeed, if society is renewed by teaching its principles to children, would a society where so many of its members are aged be sustainable in the lack of such transmission?

*When the sex ratio is severely altered—as in times of war—dramatic social upheavals have occurred (see Jones 1980)*
Moreover, society would have "glut of the able." Upper management need not retire, and professors need not quit their laboratories to make way for newcomers. One generation would have no need to make way for the next. This could lead to lack of innovation and adaptation (President's Council on Bioethics 2003). In an article entitled "The Coming Death Shortage," Charles Mann goes further, predicting that increased longevity would create an enormous economic crisis in which wealth would be concentrated almost exclusively in the hands of the healthy elderly. He maintains that "short of confiscating rich people's assets, it would be hard to avoid this divide between the elderly and everyone else" (Mann 2005).

As far back as 1969, Han Jonas noted that life-extending therapies might need to be restricted to the young—our society might have to say "no" to those above a certain age (Jonas 1969). Bioethicist David Callahan may speak for a growing number of people who believe that there is no societal need for increased longevity, and that medical progress would be better judged by its ability to help people achieve a peaceful and dignified death rather than averting death. (Callahan 2003)

**Public Policies Regarding Human Stem Cell Research**

Interestingly, the intense controversy over human embryonic stem cell research has sometimes united disparate groups. Such "strange bedfellows" include politicians representing both pro-life and pro-choice positions (e.g., Senators Gordon Smith and Arlen Specter, both Republicans with pro-life stands unite with pro-choice senators in their support of using supernumerary IVF embryos for human stem cell research; Stolberg 2001), and religious groups normally with differing viewpoints (e.g., conservative Roman Catholics are aligned with Buddhist ethicists in their disapproval of stem cell research due to its destruction of potential life).

Many of the diseases that stem cell research holds the promise to alleviate are conditions that hit close to home for virtually all Americans. By adulthood, it is unusual to find anyone who hasn't been touched by friends or loved ones suffering from Parkinson's, Alzheimer's, or multiple sclerosis. The degenerative nature of these progressive diseases and their widespread and ubiquitous occurrence combine to make them especially frightening to many, and thus many people are torn: although they dislike the idea of destroying an embryo, they are eager to achieve the hoped-for relief the research tantalizingly holds out.

Although the federal government of the United States offers little support, stem cell research has moved forward with the support of numerous

— Extracting the stem cell from the embryo destroys the embryo, and this destroys its potential for life. Like a snowflake, each of these embryos is unique, with the unique genetic potential of an individual human being. —

U.S. President George W. Bush (2001)
private research companies. Some state governments are in favor of promoting the research. In California, legislation passed early in 2005 earmarked $3 billion in state monies to fund stem cell research; the states of Massachusetts and New Jersey are also considering such legislative initiatives. Public visibility of the work has been boosted by the stories and activism of several celebrities who have been stricken. At least three major research efforts have been launched in association with high-profile Americans: the Christopher Reeve Paralysis Foundation, which funds research for developing cures for spinal cord injuries; the Michael J. Fox Foundation, which supports research for developing therapies for Parkinson’s disease; and the Ronald and Nancy Reagan Research Institute, which promotes research to advance cures for Alzheimer’s disease.

As both the debates and the research progress, it is society’s responsibility to address these issues with policies that are in keeping with the moral conscience of the majority. In pluralistic societies such as the United States, this is difficult, especially when the problems being addressed involve highly technical details.

**Government regulation**

Several countries have determined that research on human embryonic stem cells should be regulated but vary widely on the level of regulation that they have instituted. Among countries that allow research with restrictions are Finland, Greece, the Netherlands, Sweden, Israel, and the United Kingdom. The United Kingdom, while having instituted strict controlled regulations, is also among the most liberal in its government support of human embryonic stem cell research. For example, it was the first country to establish a government-supported human stem cell bank, accepting its first human cell lines derived from embryonic stem cells in May of 2004 (Pitcher 2004). More recently, government regulators in the United Kingdom granted the first one-year license to a laboratory, allowing it to pursue therapeutic cloning for work on a cure for Alzheimer disease (Timmons 2004). Other governments that support human embryonic stem cell research and therapeutic cloning (but not reproductive cloning) include Singapore, South Korea, and China. In China, the government has started building a state-run stem cell bank, including a transplant center and stem cell engineering development center.

Countries that presently prohibit the procurement of stem cells from human embryos include Germany, Austria, Denmark, France, Ireland, and Spain; these countries have varying policies on the use of human embryonic stem cell lines procured from other countries. Some of these are in the
process of discussing revisions to their policies. A number of countries, including Belgium, Italy, Luxembourg, and Portugal, have no specific legislation. However, several of these nations are in the process of discussing regulation (Commission of the European Communities 2003).

In the United States and Canada, no federal laws regulate research on human embryos, though several laws are presently under discussion. In the United States, regulations are in the form of restrictions on use of federal funds for research. Citing his belief that blastocysts “have at least the potential for life,” President George W. Bush has promised to veto any legislation that provides federal support for generating new stem cell lines. At present, research projects on human embryonic stem cells can only procure federal funding if they use human stem cell lines that existed as of August 9, 2001.

National Academies Guidelines for Stem Cell Research

Recognizing that stem cell research is going forward without government regulation, and that the unprecedented nature of the research opens new ethical questions, the scientific community has moved to address some of the issues by its own accord.

In April of 2005, the National Academies released detailed guidelines for researchers and institutions involved with stem cell research (http://national-academies.org). This group of private, nonprofit institutions provides science, technology, and health policy advice under a charter from the U.S. Congress.

Among the Academies’ recommendations for conducting stem cell research are:

- Institutions involved in this research should establish Embryonic Stem Cell Research Oversight (ESCR) committees to monitor experiments. These committees should include scientific, legal, and ethics experts as well as representatives of the general public.
- ESCR committees are responsible for ensuring that full and informed consent is obtained from blastocyst donors. No payment for such donations is to be allowed. The committee is then responsible for registering pertinent medical information about the donors and coding such information to ensure anonymity.
- Embryos should not be cultured for longer than 14 days (the point at which the body axes and neural tube begin to form).
- No nonhuman embryonic cells are to be transplanted into a human blastocyst. The transfer of human stem cells into nonhuman animals requires strong scientific justification and should be strictly monitored. Animals that have received infusions of human stem cells should not be allowed to reproduce.
- Researchers are not to pursue human reproductive cloning.

Richard Hynes, a cancer researcher at the Massachusetts Institute of Technology, co-chaired the group that wrote the guidelines. He sums up the feelings of many researchers in stating his view that “A standard set of requirements for deriving, storing, distributing, and using embryonic stem cell lines—one to which the entire U.S. scientific community adheres—is the best way for this research to move forward.” (National Academies news release of April 26, 2005)
having been created from supernumerary IVF embryos. Though this source was supposed to include 78 stem cell lines, only 15 of these have been deemed usable (American Association for the Advancement of Science 2004). Moreover, cells from these 15 lines have been described by some researchers as “difficult to obtain, difficult to maintain, and poorly characterized” (Phimister and Drazen 2004)

Public or private funding?

Thus far, the United States government has forbidden the use of government funds for the creation of new stem cell lines and will not fund any stem cell research. (See Malenschein 2003 for a history of how this situation arose.) However, it has not outlawed stem cell research or the creation of new lineages: both of these activities continue, backed by private funding.

Thus, when Douglas Melton—a developmental biologist and the father of children with juvenile diabetes—wanted to study ways in which new insulin-secreting cells could be generated, he obtained funds not from government agencies but from private sources: the Juvenile Diabetes Research Fund, the Howard Hughes Medical Institute, and Harvard University. The stem cells Melton cultures were derived from frozen, unimplanted cleavage and blastocyst-stage embryos obtained from a fertility clinic; the couples responsible for the embryos gave informed consent for this specific use of their cells. These cells have demonstrated the ability to differentiate into three germ layers and have a normal set of chromosomes in each cell (Cowan et al. 2004). Melton allows the stem cells lines generated in his laboratory to be made available to other researchers, without any personal financial gain.

The restrictions on federal funding for human embryonic stem cell research are a fiery issue. Those who feel the restrictions should be enhanced are generally opposed to any use of human embryos in research. Those who feel the restrictions should be relaxed argue that research in this country is advancing without the benefit of it being in the public realm. Because private companies usually keep the details of their experimental methods confidential, information that would be valuable to other scientists is often not passed on through peer-reviewed scientific publications; federally funded research, on the other hand, must be published, and information about the research is within the public realm from the time the grant application is approved.

In addition, private companies are under no obligation to follow the strict guidelines set up for federally funded research (although many companies voluntarily comply, setting up their own ethics committees to establish policy). Federally funded research is always under strict review and must abide by the rigid guidelines established by the granting agency, or the funding is revoked and disciplinary action may be taken (Dhanda 2002).

The opinions of the general public on this issue are split, but the positions of most scientific and medical associations (including the American
Society for Cell Biology, the Society for Developmental Biology, the American Medical Association, and the Coalition for the Advancement of Medical Research) are united in their support of relaxing the restrictions on federal funding. Most researchers would agree with Lawrence Goldstein (2000) of the American Society for Cell Biology, who testified before the U.S. Labor, Health and Human Services and Education Subcommittee that “stem cell research, in particular, has enormous potential for the effective treatment of human disease. Thus we believe that there is a moral imperative to pursue it in an ethically validated manner.”

**Patents**

Registering a patent gives the discoverer or inventor of a product or process the exclusive right to their invention, so that no one can manufacture, make use of, or sell the product without the patent holder’s permission. To date, over 200 patents have been granted for techniques and/or products involving embryonic stem cells, and at least 10 of those involve human stem cells (Scheinfeld and Bagley 2001). Does this use of patents, although established to encourage scientific progress by protecting the economic rights of people who develop new methods and products, have the effect of restricting access to the health care benefits that might develop from them?

Should human cells even be considered patentable subject material? The United States and the European patent offices have taken differing points of view on this issue. The U.S. Patent Office has issued patents for embryonic stem cell lines, while the European Patent Office has been unwilling to grant patents on stem cells (Whitaker 2003).

The three guidelines used by the U.S. Patent Office in granting patents are: novelty, inventiveness, and workability (the ability of the idea to actually be accomplished). The office does not specifically use morality as a guideline in refusing or allowing a patent; however, a patent request covering techniques to create a human-animal chimera was denied. The applicants, including researcher Stuart Newman and anti-biotechnology activist Jeremy Rifkin, wanted the patent in order to prevent the techniques from being used (Newman 2002). Human-animal chimeras represent another new area of ethical problems, especially when animals are given human brain tissue; see Shreeve 2005.

The European office’s refusal is based on the European Biotechnology Directive of 1998 that requires the exclusion from patenting of inventions that are “contrary to ordre public or morality” (Official Journal of the European Communities 1998). Those in disagreement with the European Patent Office stance state that this Directive confuses ethical concerns about science with those concerning patents. Conversely, there are Americans who would like to see moral concerns become part of the U.S. patenting criteria.
Justice: Distributing the Pie

If stem cell research eventually leads to cures, will these cures be equally available to all who could benefit from them? It is a fair assumption that such cures would be both technology-intensive and extremely expensive. Thus, they would have limited availability in those countries without advanced medical systems, and in countries where health insurance is privatized, not all citizens have access to health care and expensive treatments usually are not distributed proportionately. Should a country such as the United States allow public money to be used to develop health treatments that will presumably benefit only the well-off, when this money could be put toward, say, expanded basic health care for the disadvantaged?

The realization that the treatments developed from human stem cell research may well benefit the wealthy over the poor leads some ethicists to argue against supporting this research. Because of the risks of diverting public funds away from the real health concerns of the poor, certain ethicists denounce the strong emphasis placed on stem cell research, agreeing with Suzanne Holland, professor of religious and social ethics at the University of Puget Sound, who writes, “[W]e would do well to subject public policy in question to the scrutiny of a moral litmus test that ensures the least well-off among us that they will be as likely to benefit as the most advantaged. Justice demands no less” (Holland 2001).

Counter to this argument is the sense among some medical researchers that the potential for this research is so great as to transcend any economic argument. Even if it were to initially benefit primarily the wealthy, the benefits that would accrue from alleviating these degenerative conditions—which affect vast numbers of people of all backgrounds—would eventually offset any early inequity.

The economic cost of maintaining victims of, for example, Parkinson’s disease, is already extremely high. Caring for relatives with Alzheimer’s disease likewise can devastate any family, but is far harder on those with fewer economic resources. Such conditions perhaps hit the many members of the “working middle class” even harder than the truly disadvantaged. The burdens of the caregivers in these situations—the majority of whom are women—should also be considered in the economic equation. In this vein, it seems to many that any therapeutic prospect with serious potential to lessen the impact of these long-term and widespread health problems should be vigorously pursued.

Human Dignity and the Moral Status of the Embryo

The moral debate about stem cells is not about good versus evil or science versus religion; it is about two competing notions of what is good for human dignity (see Gilbert 2001). The first concept of human dignity is an
abstract notion maintaining that there is something special about being human that sets us apart from other animals. This “something special” could be our rationality (which encompasses our ability to articulate a concept such as “human dignity”), or our ability to communicate. The religious may view the “something special” as the human soul, that we are formed in God’s image, or that only humans are extended the possibility of redemption.

One need not be religious to have the intuition that there is something special about being human. Laws against slavery and cannibalism recognize the inherent worth of a human being above other animals. However, the religious notion of human dignity has on occasion been used to thwart improvements in the human condition. Conservative Christian groups vehemently opposed vaccination against smallpox, even a hundred years after its first use. Smallpox vaccine came from cows, and these groups felt that the injection of material from a cow into a human was an affront to human dignity.

The second concept of human dignity is more concrete. In this definition, part of our human dignity is found in the using of one’s brain to ameliorate the consequences of disease (see Heschel 1985). Physicians often note that disease not only affects the body, but it can rob a person of his or her dignity. Thus, supporters of human stem cell research argue that such research has the potential to restore human dignity to the suffering. The Alzheimer’s patient would be able to dress himself and recognize his family; the Parkinson’s patient would be able to control her speech and movements; and the paraplegic would be able to walk and control his bowel.

Supporters of stem cell research feel that it is more important to restore dignity to adult humans than to accord an abstract concept of human dignity to an embryo that has not yet become an individual (i.e., it can still form twins) and has no head, heart, arms, or even a distinguishable front or back. Thus, the Nobel Prize-winning biochemist Paul Berg told the United States Congress, stem cell research and clinical trials are important and “we are ethically and morally obligated to pursue them for the benefit of those who suffer” (Berg 2003). Similarly, embryologist John Gearhart feels that “it is the throwing away of fetal material that’s unethical,” since “its germ cells might be translated into lifesaving therapies” (Gearhart 2004). Thus, some religious groups, such as the Catholic Church, favor the first model of human dignity. Other religious groups, such as the Presbyterian Church and many Jewish groups, are in favor of the second model.

The danger of this second vision of human dignity is that one can slide down a “slippery slope” to the point where any technological procedure
that can be done should be done. As Leon Kass, chairman of the President’s Council on Bioethics, wrote in 2001, “the real challenge of society is to find a way to reap the benefits of new biology without sliding down the road to Brave New World and human degradation.”

Religious perspectives

When representatives of various religions discuss the ethical basis for allowing or disallowing the therapeutic use of human embryonic stem cells, most of the concerns center around the question, what is the moral status of the human embryo? Where disagreement arises is not in the general premise that human life is to be valued and protected, but rather in the definition of human life and, more specifically, when life begins (Dhanda 2002). The views of various major religions on this point are discussed in Chapter 2. However, there are some points that are specific to the stem cell situation.

THE JEWISH PERSPECTIVE From the Jewish perspective, the fertilized egg does not have “personhood” and the unimplanted embryo is without legal status. Jewish rabbis have frequently interpreted Genesis 9:6 (“Whoso sheddeth man’s blood, by man shall his blood be shed”) as being against abortion. However, since this text deals specifically with blood and the preimplantation embryo in a Petri dish has no blood, most feel these embryos can be used for study (Weiner 2005). Even if implanted, during the first 40 days these embryos are considered to be “as if they were water” (Dorff 1999). From this perspective, frozen embryos may be discarded or used for reasonable purposes, including stem cell procurement and subsequent stem cell research (National Bioethics Advisory Commission 1999). Moreover, the Jewish precept that humans have an obligation to heal means pursuing stem cell research in an effort to advance therapies is of great importance. Supernumerary embryos from IVF clinics are considered ethically usable for stem cell research. “In fact, such research might well be mandated to save life in Jewish law” (Zoloth 2001).

ROMAN CATHOLIC AND EASTERN ORTHODOX PERSPECTIVES The Roman Catholic perspective that an embryo is an individualized human entity from the moment of fertilization effectively prohibits all human embryonic stem cell research. In this tradition, where abortion is totally unacceptable, using embryonic germ (EG) stem cells is also not permissible, since even using the discarded tissue from an aborted fetus to create these stem cells would constitute supporting abortion by the concept of “complicity” (National Bioethics Advisory Commission 1999).

In something of a contrast to the Roman Catholic tradition, the Eastern Orthodox Church views a human as progressing toward the likeness of God, and believes that this progression begins at fertilization. An elective
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abortion is seen as an act of defiance against God's grace. In this tradition, therefore, human embryonic stem cell research that uses supernumerary IVF embryos cannot be supported, since it implies complicity with abortion. However, because medicine is thought to be a divine gift and it is believed that humans have an obligation to heal, this tradition can support human embryonic stem cell research provided it uses already existing cell lines or stem cells obtained from miscarriages (National Bioethics Advisory Commission 1999).

CHRISTIAN PROTESTANT PERSPECTIVES Christian Protestant perspectives are almost as diverse as the number of Christian Protestants. The most restrictive positions come from those who view the embryo as the weakest among us, requiring protection. This usually translates into a human embryo having equal moral status to that of an adult. From this perspective, any use of human embryos for research is unacceptable. Less restrictive positions support research on human embryonic stem cells obtained from supernumerary embryos from IVF clinics and fetuses aborted for therapeutic reasons (National Bioethics Advisory Commission 1999), and many Protestants eagerly support the research based on the perceived benefits it might engender.

ISLAMIC PERSPECTIVES Islamic interpretations provide great tolerance for using human embryonic stem cells. It is thought that full human rights for an embryo do not occur until ensoniment, which most Islamic scholars consider occurs around 120 days after conception, though some view it as occurring as early as 40 days after conception. In this tradition, ethicists consider it acceptable to conduct research on human embryonic stem cells obtained prior to ensoniment, either from supernumerary IVF embryos or from embryos created specifically for research (National Bioethics Advisory Commission 1999).

The Common Disconnect between Ideal and Action

Most people will act in what can be seen as opposition to even deeply held moral convictions. Thus the senator who believes in the pacifist Christ will vote in favor of a war in which innocent children will undoubtedly be killed. The animal lover will be upset by the sight of dead deer in a hunter's truck but will go on to enjoy her hamburger for lunch.

It is perhaps necessary to human survival that most people are able to perform the mental gymnastics necessary to bridge the gap between their ideals and their actions. Examples of this "disconnect" can be drawn from any religious group. Damien Keown, editor of the Journal of Buddhist Ethics cites one from the primarily Buddhist country of South Korea. The opinions of Buddhist ethicists place great importance on not harming any life,
human or non-human. Thus, whether or not the embryo is “human” is not of primary importance—it is a life. Moreover, the human life created at conception is believed to be the bearer of “the karmic identity of a recently deceased individual, and thus entitled to the same moral respect as an adult human being.”

Given this context, Keown points out that “it is interesting that Buddhists are the religious majority in the country where the latest breakthrough in stem cell research occurred” and despite the traditional Buddhist opposition to abortion, and despite the fact that abortion for social reasons is illegal as well as contrary to the majority religion, South Korea has been called an “abortion paradise”; figures of more than 1.5 million abortions performed yearly are often cited, suggesting that “there is unresolved dissonance between Buddhist teachings and practice on the moral status of embryonic life” (Keown 2004).

Stem cell research is a subject area where increased knowledge and experience may come to override political or religious convictions, especially because immediate and personally threatening health problems are involved. Many public figures in the United States who are against abortion rights and cloning in general have come out in favor of stem cell research for degenerative diseases. Nancy Reagan is probably the most prominent. Well known conservative legislators Orrin Hatch and Strom Thurmond also supported this research, despite their vehement vocal opposition to the right of a woman to end her pregnancy.

Indeed, the readiness with which some conservative politicians have simultaneously espoused anti-abortion and pro-stem cell views has caused several philosophers and attorneys to speculate that the political “culture of life” in the United States is in fact primarily an attempt to erase the procreative and other legal rights women have gained since the 1960s and to return America to a place where men control both politics and the family. Such events as the recent assaults by anti-abortion activists against a woman’s right to obtain contraceptives (see page 58) and the derailment of U.S. Senate legislation that would fund family planning and teenage pregnancy prevention programs lend credence to this viewpoint (see Dogin 2004; Feldt 2004).

For those whose convictions are in fact rooted in faith rather than politics, the most difficult questions may arise if stem cell research—which is still in its infancy—eventually does produce viable cures for some of humanity’s most feared conditions. As one bioethicist noted (Fleischer et al. 2004), if it should become possible to cure your dog’s diabetes with stem cells, how could you deny such benefits to your child or your father?
Would a person elect to watch their spouse suffer the deterioration of Alzheimer's disease because the cure for it was derived from embryonic cells? Would a paraplegic give up the opportunity to walk again on ethical grounds? If proposed stem cell therapies do not come to fruition, or if they prove ineffective or dangerous, the need to make such decisions will not arise, nor will society be presented with the huge ethical dilemma of how to decide who receives such therapies. Should stem cell research realize its hoped-for potential, however, individual suffering may be alleviated—but the effects this could have on the structure of society may present a new set of problems.