

# Stem Cell Research and Therapy: What should we do?

## Gathering

### HYMN

Suggested hymn: *LBW 360/ELW 610* "O Christ the Healer, We Have Come"; for other suggestions, see page 119.

### PRAYER

We give ourselves to you, O Lord. We give our hopes to you. We give our love to you. We give our fears to you. Let your love set us free. You give yourself to us, O Lord. Let us abide in you as you abide in us through Christ our Lord. Amen.



### HEARING THE WORD

Mark 4:1-9

### DISCERNING THE WORD

Silence

Discernment

What did you hear in this reading? Is there a word of God for us here?

## Introduction

### Session summary

The purpose of this session is: (1) to offer an overview of the state of stem cell research today; (2) to identify the key ethical issues in the debate; and (3) to facilitate your engagement with stem cell issues. By exploring these issues from a variety of perspectives, you will gain a deeper understanding of what is at stake in this controversy. Also, you will come to understand why you hold the views you do and why equally informed, conscientious Christians may make different judgments.



### Real life stories

1. Since 1998, when investigators at the University of Wisconsin announced they had successfully isolated and cultured human embryonic stem cells, reports of new developments in stem cell research have appeared frequently in the media. Some people greet these reports with excitement because they see great promise for the development of revolutionary new treatments for devastating diseases. Others see peril and are dismayed by what they regard as callous disregard for the dignity of developing human life.

The controversy concerning stem cell research has become political as well as ethical. Since August 2001, when President Bush announced his administration's policy restricting federal support to research on existing stem cell lines, Congress has twice adopted—and the President has twice vetoed—legislation to expand federal funding. State legislatures, popular referenda, and candidates in two presidential elections have taken positions for or against various types of stem cell research. How should we, as Lutheran Christians, view stem cell research—as promise, as peril, or as a mixture of both?

2. Watch NOVA Science NOW segment online regarding stem cells (aired 2005) [www.pbs.org/wgbh/nova/sciencenow/3209/04.html](http://www.pbs.org/wgbh/nova/sciencenow/3209/04.html)



Even today, the best seed may produce an uneven crop due to difficult soil and environmental conditions.

Why does the Sower keep sowing?

## What are stem cells?

Stem cells are cells that have the ability to generate perfect copies of themselves each time they divide and to continue doing so indefinitely. All other cells have an internal clock that limits the number of times they can reproduce. Skin cells, for example, reproduce fifty times and then they die. The other characteristic that distinguishes stem cells from other cells is that they have the potential to become specialized into more than one type of tissue. Stem cells that can generate many different types of cells are called *pluripotent*. Other stem cells are *multipotent* in that they can become only a limited range of cell types. For example, blood stem cells can become red blood cells, white blood cells or platelets but nothing else.

Understanding these processes and the signals that direct development holds enormous potential for medicine. Any disease involving the death of cells (e.g., Alzheimers, Parkinsons, hepatitis, and diabetes) is a candidate for a stem cell therapy. Other diseases and conditions that might be treated with stem cells include paralyzing spinal cord injuries, stroke and brain trauma, heart disease, cancer, HIV/AIDS, multiple sclerosis, diseases of the blood, bone, and cartilage. The basic idea would be to replace the patient's dead or malfunctioning cells with new cells generated by transplanted stem cells. Obviously, the number of people who have or will develop one of these diseases or conditions is staggering. That is why stem cells have been called "the Holy Grail" of medicine.

Stem cells used in research come from a variety of sources; some, but not all, of which are highly controversial. Initially, *pluripotent* stem cells came either from embryos created by in vitro fertilization clinics but no longer needed for infertility treatment (so called "surplus embryos") or from fetal tissue obtained from terminated pregnancies. A third source is to use somatic cell nuclear transfer (the technique used to create Dolly, the cloned sheep) to create an embryo that would be genetically identical to the donor of the somatic cell. The stem cells derived from the embryo after five to seven days of cell division could be transplanted back into the donor without any histological incompatibility or the need for immunosuppressant drugs. This method (also known as "therapeutic cloning" or "cloning for research") has yet to be done in humans. As in the case of using surplus embryos, the process of obtaining stem cells destroys the embryo. But here, the embryo has been created expressly for the purpose of deriving stem cells.

Other sources of stem cells are less controversial. *Multipotent* stem cells can be found in various types of tissue (e.g., umbilical cord blood, bone marrow, and skin) and do not require the destruction of an embryo. These *multipotent* stem cells are called adult stem cells because they are the type of stem cell found in the adult organism and are more specialized than the *pluripotent* stem cells found in the embryo. For example, the wisdom teeth of adolescents (routinely removed for orthodontic reasons) contain a large amount of adult stem cells that are very similar to embryonic stem cells and can be turned into brain, bone, and muscle cells. While adult stem cells are generally thought to be less useful medically than *pluripotent* embryonic stem cells, the fact that they are already specialized may be advantageous in certain clinical applications. Adult stem cells have started down the path toward becoming the type of cell needed by the patient, whereas embryonic stem cells could behave erratically and actually harm the patient. Adult stem cell therapies have already proven successful in the treatment of sickle cell anemia and leukemia.

Recent research suggests that it may be possible to obtain embryonic stem cells or similarly *pluripotent* stem cells without destroying viable embryos. Research is under way using parthenotes (unfertilized eggs that can be induced to start dividing but could never develop the placenta needed for gestation). Another method involves the same process used in assisted reproduction programs to assure that an embryo created *in vitro* (in glass) is genetically healthy before it is implanted. While the procedure involves risk to the embryo, there may be little, if any, additional risk if the biopsied cell (called a "blastomere") were also used to generate stem cells. Also in January 2007, scientists reported that stem cells similar to embryonic stem cells had been found in amniotic fluid. None of these procedures involves creating and then destroying embryos, but they would generate stem cells with a genotype different from that of the patient who would receive them.

One way of acquiring *pluripotent* stem cells (identical to the patient's) might be to make a cloned embryo using an adult cell nucleus from the patient, but only after the nucleus and/or the egg into which it will be fused have been altered so that the newly constituted cell will, from the outset, lack the integrated unity and developmental potential of an embryo, and yet will nevertheless possess the capacity for a certain limited subset of growth sufficient to produce *pluripotent* stem cells.<sup>1</sup> This technique would provide the therapeutic benefit of somatic cell nuclear transfer cloning (a genotype identical to that of the patient from whom the adult cell was taken) without destroying a viable embryo.

That potential therapeutic benefit may be achieved by other means in the not so distant future. In 2007, researchers reported that "they had genetically modified human skin cells to behave like embryonic stem cells. These *induced pluripotent stem cells* were capable of forming all three germ layers both *in vitro*" and in mice whose immune systems had been suppressed.<sup>2</sup> This raises the hope that one day a patient could be treated with *pluripotent* stem cells derived from her own skin cells.

Each of these research programs has its skeptics and detractors, and the scientific and bioethical literature is full of vigorous debate about their relative merits. Time will tell which if any of them will work, but it is a heartening prospect that one day we may be able to at least *pursue* embryonic stem cell cures without doing harm to embryonic human life.

## Ethical issues

### "Playing God"

For some people the very idea of using stem cells amounts to "playing God." By this they mean that the Creator has not delegated to us the authority to "tamper" with genetic material. However, according to a 2004 ELCA Social Policy Resolution, "The human capacity for genetic manipulation should be understood, in principle, as one of God's gifts in the created order to be pursued for the good of all. As with any such gift, it must be used responsibly and tested for its contribution to justice and stewardship."<sup>3</sup> But just what is "the created order" within which we are to act responsibly? Is it static or dynamic, fixed once and for all time or continuously evolving? Is there an essential human nature within the created order to be protected from biotechnological alteration or are we free to re-create and improve human nature? If God created and called the creation "good," maybe we should use our God-given abilities to try to make it even better. The Resolution says that genetic manipulation should be pursued for "the good of all," but what does that mean? Do we have a common determinate understanding of concepts such as "the good" or "the public interest"? And who is included in the "all" whose good is to be pursued? Does it include embryos, fetuses, and future generations? Does it extend to all of our near and distant neighbors on the planet or primarily, if not exclusively, to those of us fortunate enough to have the opportunity to contemplate bioethical matters or possibly to benefit from genetic manipulation in the future? How will the burdens and benefits be distributed?

### Do Good (Beneficence) and Do No Harm (Nonmaleficence)

These two duties are fundamental to the moral life. The teachings of Jesus (including the parable of the Good Samaritan) and Luther's exposition of the Ten Commandments in his *Small Catechism* clearly indicate that we are responsible for the well being of our neighbors. That being the case, how could we not pursue these promising avenues of biomedical research? But at the same time Christian ethics must hold means as well as ends in view, and that requires us to resist the temptation to achieve all the good we can no matter by what means.

In the ELCA Social Statement *Caring for Health: our Shared Endeavor*, the ELCA "commends the important work of medical research and supports investment in its goals of healing afflictions, relieving human suffering, and promoting well being."<sup>4</sup> At the same time, it recognizes that "human beings are still finite" despite the fact that "we live in a culture that often denies death and suffering and places its faith in technology to over-

come them.”<sup>5</sup> The statement calls this faith “unrealistic” and “urges caution about research that expands medical technology based primarily on market pressures.”<sup>6</sup>

Priority should be given instead to research addressing “those medical interventions that are likely to improve substantially the overall health of the general population.”<sup>7</sup> Both Christian love of neighbor (*agape*) and justice require us “to work to promote the health and healing of all people” and “provide access to health care for all people in our society.”<sup>8</sup> Moreover, it’s not enough to advocate universal access. The statement urges us to consider our own “health care decisions within the context of the just distribution of health care resources,” asking not only whether we “are being served as individuals, but also whether anyone is being left behind in the ongoing advance of medical progress.”<sup>9</sup>

Would one or another type of stem cell research benefit the overall health of the general population more than vaccinations, prenatal care for poor women, prevention programs, clean water and air, or universal access to basic health care? Limited budgets require tough choices. The relative costs and benefits of stem cell research must be weighed against other medical research and public health needs. And even as we struggle to relieve suffering and achieve an approximation of justice in our allocation of scarce medical resources, we must recognize that, this side of the kingdom of God, vulnerability to suffering is an ineradicable part of the human condition.

### The Status of the embryo

There is simply no escaping the perennial question of the moral status of the early embryo. Is it our moral equal? Should it be regarded as the weakest and most vulnerable of neighbors deserving our protection, rather than exploitation in the service of others? Or is it just a clump of microscopic cells that may be manipulated, used, and discarded as we see fit?

The ELCA Social Statement *Abortion* addresses this issue but is open to divergent interpretations. The statement maintains that “human life in all its phases of development is God-given and, therefore, has intrinsic value, worth, and dignity.”<sup>10</sup> This could be taken to require us to respect the sanctity of even early embryonic life and to renounce the use of embryos in research. However, the statement goes on to observe that “although abortion raises significant moral issues at any stage of fetal development, the closer the life in the womb comes to full term the more serious such issues become.”<sup>11</sup> This could be taken to warrant a developmental view that would not accord full human status from conception on and might allow the use of embryos in the first few days of their development for research or therapy. Moreover, the statement recognizes that “there are circumstances of extreme fetal abnormality, which will result in severe suffering and very early death of an infant” and “in such cases,...the parent(s) may responsibly choose to terminate the pregnancy.”<sup>12</sup>

Clearly, the statement acknowledges the importance of relieving suffering. Some take this to suggest that it would be permissible to use surplus frozen embryos created but no longer needed for infertility treatment. Since they have no future and will be discarded in any case, shouldn’t we use them to produce medical benefit and relieve suffering?

### A “Slippery Slope” to reproductive cloning?

Another issue is the possible slippery slope from therapeutic to reproductive cloning. The process of creating the embryo is the same, but in the latter case the embryo would be implanted in a woman’s uterus. Reproductive cloning has very few advocates. Many people would support criminalization of reproductive cloning at the present time, primarily for reasons of safety. But what about in the future? Would the acceptance of therapeutic cloning today make it more likely that we will approve reproductive cloning tomorrow? Could a line be drawn and held between therapeutic and reproductive cloning? (Among other things, it would require a law mandating the destruction of living human embryos.) If we do not wish to have the latter, perhaps we’d better not accept the former.

Should we forego the possible benefits of a new technology because we fear we won't be able to control it? To say "yes" may seem too pessimistic about the possibility that reason and good will can make moral distinctions and stand by them. To say "no problem" may seem too optimistic. Doubtless, there is good reason for extreme caution. Prudence dictates regulation and oversight. But prohibition? Even if it were possible, would it be desirable?

## Justice

Even if new sources of *pluripotent* stem cells were to render the question of the moral status of the embryo moot, there remain other important ethical issues to be addressed. For example, how would the embryos for single *blastomere* biopsy be obtained? What inducements might compromise the informed consent of prospective donors? Would it be fair to donors (or the fetus they desire) if changes in the usual prenatal genetic diagnosis procedure were to affect the accuracy of the test or diminish the likelihood of a successful pregnancy?<sup>13</sup> If the altered nuclear transfer technique works, there would be a huge demand for eggs. Could it be met without endangering and exploiting poor women in our own country and around the world? (The international black market in kidneys should be a warning.) And who would be able to benefit from stem cell therapies? Only the wealthy or the well insured? Would the stem cell banks be set up so as to serve all of the ethnic groups in our society or just those of European ancestry? What public policy measures might insure fair "biological access," to say nothing of economic access, to the new therapies?<sup>14</sup> Should we continue to provide commercial patent protection to embryonic stem cell "inventions" that might inhibit medical research and make stem cell therapies too expensive for all but the wealthy? These are the sort of emergent ethical issues that we need to address and address quickly before exploitative and unjust practices become the norm.

The burdens and benefits of stem cell research are far too important to be left to the scientific, medical, or business communities alone. Religious communities should engage these issues, bringing to bear the moral convictions and critical resources of their faith traditions. Consider how the notion of justice in ELCA social statements could help us here. (See session A4.)

## Resources for faithful engagement

Having been introduced to the ethical issues, it is time to consider your own moral judgments concerning stem cell research. To a great extent, your moral judgments will depend upon how you frame the issues. A recent article in *The Lutheran* identified three such interpretive frameworks.<sup>15</sup>

The first is the *medical benefits framework*. Looking at the issues in this way focuses our attention on the potential therapeutic benefits of stem cell research. The practice of regenerative medicine (based upon stem cell research) could benefit millions of people whose lives are burdened, if not threatened, by a host of serious diseases. When the question is framed in this way, it's hard to avoid the conclusion that Christian love of neighbor (*agape*) requires the relief of suffering whenever the opportunity arises.

Of course, the question of stem cell research can be framed differently. Suppose one were to approach it from the perspective of an *embryo protection framework*. Within this frame, embryos are regarded as the weakest and most vulnerable of neighbors. Their lives are worthy of respect and protection no less than our own. On this view, Christians cannot be indifferent to their destruction. Even when embryos have been placed in harm's way by the prior actions of others and are destined to be discarded in any event, Christians should resist the temptation to exploit their vulnerability for someone else's benefit.

Still others view the issue of stem cell research in terms of a *nature protection framework*. Here the focus is on protecting human nature from biotechnological alteration. Those who hold this view believe that some types of stem cell research tempt us to move beyond the traditional practice of medicine in the service of life and health within the created natural order toward a project of unlimited self-modification. Such over-reaching blurs the distinction between the creature and the Creator and compromises human dignity. When

we attempt to be more than human (to “play God”), we risk objectifying ourselves to the point that we become less than human.

As you begin to make your own moral judgments about various types of stem cell research, which (if any) of these three approaches seems to you to be the most appropriate way to frame your critical reflection? Notice that, as with any interpretive framework or lens, some things are highlighted while others are obscured. For this reason, should we try to examine the topic using bifocal or trifocal lenses that might afford the most acute and comprehensive vision? Or are the frameworks simply incompatible?

## Invitation to conversation, prayer, and action



### QUESTIONS FOR DISCUSSION

- Within which “framework(s)” would you view the issues concerning stem cell research? Why?
- Are frozen spare embryos “neighbors” and, if so, might it be acceptable to sacrifice some of them for the benefit of many other neighbors? Explain.
- Is it realistic to think that cloning for research (“therapeutic cloning”) could be adequately regulated? Why or why not?
- Would therapeutic cloning inevitably be a first step down the “slippery slope” to reproductive cloning? Why or why not?
- Who is likely to benefit from the therapeutic applications of stem cell research?
- Who may be exploited in the process?
- Of which types of stem cell research do you approve or disapprove?
- If there were a referendum in your state to commit public funds for the promotion of embryonic stem cell research, how would you vote? Explain.

### Closing prayers

#### INVITATION TO INTERCESSORY PRAYER

Pray for those who long for new life, those who wait for new treatment options, and those who work to discover and utilize the gifts of God’s creation.

#### PRAYING WITH THE TRADITION

Eternal light, shine in our hearts. Eternal goodness, deliver us from evil. Eternal power, be our support. Eternal wisdom, scatter the darkness of our ignorance. Eternal compassion, have mercy on us; that with all our heart and mind and strength, we may seek thy face and be brought by thy infinite mercy to thy holy presence, through Jesus Christ our Lord. Amen.

(Prayer of Alcuin, who lived 735 to 804)

### Additional resources

Ted Peters, Karen Lebacqz and Gaymon Bennett, *Sacred Cells? Why Christians Should Support Stem Cell Research*, Rowman & Littlefield Publishers, Inc., 2008.

Michael Ruse and Christopher A. Pynes, *The Stem Cell Controversy*, 2<sup>nd</sup> ed., Prometheus Books, 2006.

Brent Waters and Ronald Cole-Turner, *God and the Embryo: Religious Voices on Stem Cells and Cloning*, Georgetown University Press, 2003.

## Endnotes

1 William B. Hurlbut, Robert P. George, and Markus Gompe, "Seeking Consensus: A Clarification and Defense of Altered Nuclear Transfer," *Hastings Center Report*, 36:5 (2006), 43.

2 Insoo Hyun, "Stem Cells From Skin Cells: The Ethical Questions," *Hastings Center Report*, 38:1(2008), 20-22.

3 ELCA Social Policy Resolution on Genetically Modified Organisms in the Food Supply (2004), p. 4.

4 *Caring for Health: our Shared Endeavor*, Evangelical Lutheran Church in America, (2003), 17.

5 *Ibid.*, 1.

6 *Ibid.*, 17.

7 *Ibid.*

8 *Ibid.*, 18.

9 *Ibid.*, 22.

10 *Abortion*, Evangelical Lutheran Church in America, (1991), 2.

11 *Ibid.*, 7.

12 *Ibid.*

13 Kathy Hudson, "Embryo Biopsy for Stem Cells: Trading Old Problems for New," *Hastings Center Report*, 36:5 (2006), 51.

14 Ruth R. Faden, Liza Dawson, Alison S. Bateman-House, *et al.*, "Public Stem Cell Banks: Considerations of Justice in Stem Cell Research and Therapy." *Hastings Center Report*, 33:6, 13-27. It is also available in Michael Ruse and Christopher A. Pynes, *The Stem Cell Controversy* (Amherst, NY: Prometheus Books, 2006) 199-222.

15 Ted Peters, "Stem Cells: A Moral Question?," *The Lutheran*, January 2008, 17-18.

