

Before the chaos unleashed on our world two weeks ago, science and ethics were near the top of President Bush's agenda. In our national priorities, it has taken a well deserved back seat, but research, both public and private, into the development and use of stem cells continues.

Stem cells are amazing cells that are in such a primitive state of development that they have not yet differentiated themselves into nerve cells, bone marrow cells, liver cells, heart cells, or any of the dozens or hundreds of different kind of cells that make up the human body.

What makes them amazing is that they have the potential to become any one of these kinds of cells, and what is even more amazing is that their undifferentiated nature means that they may not provoke a rejection response if they are transplanted into a body other than the source of the cells.

This means that they have enormous potential to cure diseases such as Alzheimer's or Parkinson's, which ravage irreplaceable brain tissue. They also hold great promise to heal spinal cord injuries such as the one which placed Christopher Reeves in a wheelchair. In addition, last month in Israel scientists grew human heart cells from embryonic stem cells. Imagine -- a heart transplant that would work perfectly, without fear of rejection, and without waiting for somebody else to die. The potential for good is enormous.

Why would we dream of limiting research into such a promising resource? Because currently, the most common source of stem cells is from human embryos, specifically embryos created by couples who go through in vitro fertility treatment. It is ethical to experiment on human embryos?

On one hand, since the research holds great promise to cure disease and save many lives, one might invoke the principle of *pikuah nefesh*, that saving a life supersedes just about every other mitzvah. If you place before me a clump of 4 or 8 cells in a petri dish, which even if implanted in a uterus has only a 20-25% chance of surviving, and a living, breathing, human being suffering from Alzheimer's or paralyzed by a spinal cord injury - shouldn't I choose the person already alive, and sacrifice the embryo?

On the other hand, the principle of *pikuah nefesh* is specifically limited. Leaving self defense aside, one is not allowed to take a life in order to save a life. Most of the research on stem cells is being done with embryos that were created using in vitro fertilization by couples trying to have a child -- so even if any one of them only has a one in four or five chance of survival, it was created with the hope, prayer, and intention of becoming a living child. An embryo is nascent human life. Wouldn't experimenting on them be akin to taking a life to save a life?

Hovering around the dark edges of these questions are the labs, such as the Howard Jones Institute in Virginia, who are creating embryos solely for the purpose of research.

What is there in Halakha, Jewish law, that would give us guidance? First of all, there is a halakhic concept that in the first 40 days after conception, the embryo is *maya b'alma*, simply water. It has no legal status whatsoever. Most likely, this is because in Rabbinic thinking, for something to have legal standing it must have visible form. An embryo in the first month is too small to have clear features visible without magnification -- and even under a microscope, it has no human features. Thus, there are halakhic opinions based on *maya b'alma* that stem cell research should be unrestricted.

But hold on! We pride ourselves as Conservative Jews for allowing halakha to change if conditions in society or science change. We know that the genetic information contained in a few human embryo cells is different than that contained in a tapeworm. Shouldn't this change

the way we decide halakha? Shouldn't an embryo have some legal standing as a human being, even if it doesn't yet resemble a person?

In addition, even though halakha calls a pregnancy *maya b'alma* prior to the 40th day after conception, it is not the case that abortion is unconditionally permitted in the first 40 days. Jewish law on abortion does not differentiate between pre- and post- 40 day pregnancies. Indeed, based on the Jewish perspective on abortion, that it is permitted, even mandated, if the pregnancy is a danger to the life or health of the mother, there are very few grounds for abortion in such an early pregnancy.

Further, there is a significant difference between an embryo in utero and an embryo in vitro, in a petri dish. An embryo in vitro is not viable until it is transferred to an environment in which it can grow -- a human uterus. There is an important halakhic concept that can be used here, known as *shev v'al ta'aseh*, roughly translated as "sit back and do nothing." This principle is applied in cases in which if one refrains from taking action, one is not liable for the outcome. Thus, if one were to *shev v'al ta'aseh* with an embryo in vitro, it would die a natural death.

Therefore, one could argue that Jewish law on abortion protecting embryos does not apply until the embryo is in utero, and embryos created in vitro may be used for unrestricted research.

Against this, a local fertility specialist whose opinion I value greatly, suggested that if enough money was thrown at the problem, in the foreseeable future scientists could develop the technology to grow an embryo from conception to "birth" entirely outside of the womb. Therefore, at least in theory, this "inside the womb, outside the womb" distinction no longer is supportable.

There are several directions we could take this argument. One would be to reject the *shev v'al ta'aseh* argument. It does seem disingenuous to create human life intentionally in a petri dish, and then turn around and argue that it isn't valuable human life because it isn't viable. Therefore, all embryos should be treated and protected as sacred nascent human life.

Alternatively, one could accept *shev v'al ta'aseh*, but apply it differently. After all, most couples create more embryos than they intend to use immediately, and store the extras by freezing them. Now, one might argue that the *shev v'al ta'aseh* principle works the other way. By doing nothing but maintaining the freezer, the embryos will survive indefinitely.

Even if we accept *shev v'al ta'aseh* as argued, it still leaves a major question. Is there any moral distinction between doing research on embryos obtained from fertility clinics, which were in fact created for the purpose of creating life but were later abandoned; or creating embryos in a laboratory solely for the purpose of research.

I believe that the process of combining sperm and egg into human life should be a sacred act. It should only be done with the intention of nurturing a human life, not for the purpose of experimenting on the outcome. However, after they are created, those that are not used by the couple or donated by the couple to another couple who cannot conceive on their own, should be donated for research purposes rather than be destroyed.

I would not apply *shev v'al ta'aseh* to frozen embryos, because the freezer does not exactly maintain life -- it suspends life, preventing death. It is similar to a ventilator on a brain dead patient, which nearly all Jewish opinions say may be removed. If artificial gestation becomes a reality, the *shev v'al ta'aseh* still would apply in the sense that the embryo would need to be transferred from the dish to the artificial womb environment.

President Bush, last month, announced a new policy on Federal funding of stem cell research, seeking a compromise between those who feel that experimenting on embryos is absolutely morally wrong, and those who want no restrictions. He said that federal funds may only be used for stem cells already created -- but any created after his announcement would not qualify. It was later announced that there are only 64 stem cell lines in the world that qualify for Federal dollars, most of which are owned by private for-profit companies.

The problem with President Bush's compromise is that it doesn't really address the larger ethical issue.

I want to suggest that it is more than simply a question of when does life begin, which mires us in the abortion debate. The greater issue, as I see it, is the commercialization of the human body. The applications of stem cells have the potential to generate billions of dollars. Currently, unregulated research being done in the private sector far outweighs research done with Federal money. Researchers who want to work with public money now have to negotiate a deal with the private companies who own the stem cells, which means that they may not completely own their discoveries. Treatments patented by private companies will most certainly be priced far beyond the means of all but the very wealthy. President Bush's compromise will have the effect of intensifying the commercialization of the human body. First of all, it is yet not known how many of the 64 lines approved for government funding are actually viable, or how many that are viable will be able to turn into neural cells, insulin producing cells, or the other specialized cells that researchers seek to produce. Second, only 20 of the 64 lines are in United States, and it is not known whether the foreign lines can survive long distance travel. Considering all this, President Bush's compromise has made it much more likely that private companies whose research is unrestricted, rather than public research institutions, will have the most successful stem cell lines.

Another weakness of President Bush's stem cell announcement was its sheer arbitrariness. What sense does it make to fund research with Federal money on stem cells "born" at 8:59 p.m. Eastern time Aug. 9, but to deny it to a stem cell line "born" one minute later, the moment Bush began his speech announcing the stem cell policy. It would have made more sense to have given funding to the first 100 projects who could document that the embryos they used came from couples who had signed papers ordering their embryos to be destroyed -- and were then convinced to donate them instead. Those calling for a total ban would still not have been appeased, but at least the decision would have had a real ethical logic to it.

It is very troubling to me that most of this cutting edge research is happening with little or no discussion of ethics, and this also was not addressed by President Bush.

A company called Advanced Cell Technology is pursuing cloning experiments in which embryos are created with the aim of treating disease. Glenn McGee, a philosopher and assistant professor of bioethics at the University of Pennsylvania, resigned abruptly from their ethics board last year, saying the company was too secretive. The final straw, he said, came when a reporter asked him to comment for a television segment about a biotechnology company that had cloned an endangered animal. The professor replied that this was "playing God." Only later did he learn that the company in question was Advanced Cell Technology. The CEO later apologized and said he had not thought of the animal experiment as something that had required ethical review.

Most of our government officials do not understand science well enough to make serious judgements, so I will not suggest the creation of any new Federal laws to address my concerns.

The best solution as I see it would involve Federally mandated Bioethics boards for every company that does research at a cellular or genetic level, with clear guidelines of the kind of open oversight required. As a model, we can look at the open meeting law, designed to keep the political process above board; or even the standard contract for kosher supervision, which gives to the supervisor the keys to the store and the books to use at any time, day or night, so the store owner cannot conduct any business that isn't totally kosher. Payment for serving on the boards could be set at a reasonable minimum level so that those serving would not rely on it for a regular income, to address the very real potential conflict between serving on a board charged with being critical of a company's research while relying on the company for income. There should also be a system of Federal Bioethics appeals boards, so that either the company or individual members of the company bioethics boards could appeal a decision they though was not correct.

This research is both exciting and dangerous. It holds the keys to a promising future, but the same keys also open the door to a darker future if misused. May God guide the hands and minds of the scientists, doctors, and researchers, and help them to use their powers wisely and well, and with control. In this new year, may we find new reasons to appreciate the complexities and wonders of God's world, and may those new discoveries bless our lives. Amen.