Two weeks ago Senator Bill Frist made headlines with his apparent turnabout in favor of federal funding for research using embryonic stem cells (ESC) -- a break with the policy of President Bush. Almost all proponents of ESC (potentially far more flexible and thus conducive someday to far more treatments than adult stem cells) saw this as terrific news, while opponents -- including a full spectrum of religious groups and social conservatives -- characterized Frist as a traitor. But Frist may not have changed enough to keep him from stifling ESC after all.

True, Frist says he now supports legislation that would allow the use of federal funds for research using "leftover" fertilized eggs from in vitro fertilization procedures. Four years ago, President Bush approved federal funding for such research -- but limited it to the seventy-eight embryonic stem cell lines created before an arbitrarily chosen date: August 2001. The limitations of this restriction quickly became apparent: as of today, only twenty-two of these lines have proven to be useful for research.

Newspapers around the country, including the New York Times, editorialized in praise of Senator Frist, saying that the Senator "deserved credit" and that his reversal was "very welcome." Even with Frist's change of heart, the passage of legislation to approve federal funding of ESC is still not certain, but nearly everyone hearing of the Frist move was either (a) very encouraged, envisioning the United States finally getting into the race to derive life-saving therapies using embryonic in addition to adult stem cells, or (b) very discouraged, proclaiming that even normally "pro-life" politicians are now succumbing to surging popular support for all forms of stem cell research.

The reality is more complicated than this dichotomy of reaction suggests. Much more complicated.

The problem, one which may in the long run be a devastating blow to U.S. scientists who want to advance stem cell research, is one of public confusion, incomplete information, and just plain ignorance about what stem cell research is, and what techniques are involved.

Members of the scientific community are partly to blame for this sorry state affairs and now run the risk of the public rejecting this line of research and the potential life-saving therapies it may produce -- all because the public may now feel "out of the loop" on what this research is really all about.

The primary problem here is that American consumers have been led to believe that if only President Bush -- or a Congress overruling him -- would allow federal funding for research on fertilized eggs from fertility clinics (ones which would otherwise be discarded), then we would be well on our way to cures for Parkinson's disease, diabetes, and a whole host of other maladies.
If you believe that making available the 400,000 fertilized eggs now in the freezers of medical facilities around the country will give researchers what they need to forge ahead with new breakthrough technologies, then of course you would applaud Senator Frist's announcement. And you would ask for no more.

But the well-guarded secret is that access to these few hundred thousand embryos, while it may assist researchers temporarily, is only part of what is needed to keep America in competition with other nations seeking stem-cell based therapies.

What American stem cell scientists need is what is granted to scientists in countries around the world: federal funding for research that involves what is technically known as "somatic cell nuclear transfer" (SCNT). This process involves removing the genetic material (the nucleus) from a donated human egg, replacing it with genetic material from a living person -- a nucleus from a donor's cell -- and stimulating the egg to develop. The result is equivalent to a human embryo -- but one which was not created through the fusion of an ovum and sperm. Nonetheless, the resulting product is a "blastocyst," which if implanted in a womb might develop into a baby -- who would have the same genetic profile as the donor.

That brings us to the word "cloning."

Indeed, SCNT is another term -- albeit a less charged one -- for the term "therapeutic cloning." The difference between therapeutic cloning and what is known as "reproductive cloning" lies not in methodology but in intent. Reproductive cloning is performed with the intention of creating a fully-formed organism, a clone like the sheep Dolly. But blastocysts created for therapeutic cloning, as in the example above, are not intended to be implanted in a uterus. In fact, they are never allowed to develop for more than five days. Instead, these blastocysts are seen as sources of cells with the unique potential to form any cell type in the human body. It is these cells that scientists hope to understand well enough to guide their formation into neurons that could treat Parkinson disease, insulin cells that could cure diabetes, and more.

By his "turnabout," Senator Frist implies no more than that he would approve federal funding for research on already-existing embryos from fertility clinics. Not only did he fail to endorse SCNT, but there is reason to suspect that any Senate legislation he and his colleagues might vote for would have a provision specifically prohibiting federal funding for "any form of cloning."

If this happens, advocates of stem cell research will find themselves in a "one step forward, fifty steps back" scenario. The leftover IVF embryos will provide some research potential -- but the real promise for advancing new therapies lies with SCNT using donated eggs. The tragedy here is that there has been so much emphasis on freeing up fertility clinic embryos for research with federal dollars that if this happens, an overwhelming majority of Americans will think we are home free. Scientists subsequently announcing "No, this is not sufficient" will not be well-received and will anger those who wish to prevent the creation of research embryos of any type, who often use the argument "We must not create life to destroy life."

Scientific advocates for embryonic stem cell research must step up to the plate and do a better job of educating the public, specifically:
--explaining what techniques are involved in such research
--comparing and contrasting the results of reproductive cloning with those of nuclear cell transfer (therapeutic cloning)
--repeatedly explaining that at all times researchers are motivated by a respect for human life.

Creating embryos through nuclear transfer is not a pointless technological stunt. The efforts underway are intended to save human lives and prevent human suffering.

We are at a critical time in shaping the future of stem cell research. Keep an eye on the Senate. If Sen. Frist signs onto legislation that permits federal funding of research on fertility clinic embryos but the bill includes a rejection of funding for the cutting-edge research of nuclear transfer, then that great "turnaround" that got the headlines last week will turn out to be an ominous mirage.

**Dr. Elizabeth M. Whelan is President of the American Council on Science and Health (ACSH.org [1], HealthFactsAndFears.com [2]).**