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EDITORIAL

Human Embryonic Stem Cell Research: No Way Around a Scientific Bottleneck

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In recent months, the American public has been bombarded with reports of prominent stem cell scientists attempting to run end-around plays against current US government policies that restrict research that requires the destruction of human embryos. These scientists, now run amuck, have derived human embryonic stem cells (hESCs) with nonfederal funding, have announced plans to establish privately funded centers for hESC research, and have been removed from the President's Council on Bioethics after attempting to defame the character of other council members who did not share their views.

As a rule, reports on the controversy around hESC research, since the President announced his administration's policy for restricting the number of approved cell lines in 2001, have only listed nonscientists as critics. The public has been told about the objections of politicians, religious groups, and antiabortion activists, but not those of other stem cell scientists. This situation reflects the homogenization of scientists' views into the political rhetoric of their professional organizations.

The leadership of scientific organizations often errs by presuming that all of their membership think like them, and dissenting opinions are not represented when they politicize their messages to Congress. Although they may hold open forums on this topic at their national meetings, formal polling of their memberships on important science-society topics is largely unheard of. Too often, leading scientists get confused about the difference between defending the free pursuit of science (our livelihood) and serving the public good, which is a responsibility owed for the use of public resources to support our research. When our leaders ignore or fail to acknowledge this responsibility, they destine future scientists to the fallout of public mistrust.

The public needs to know that many expert stem cell biologists are also against research that results in human deaths. We are quite disheartened and disappointed by the attitudes and tactics of our colleagues and mentors who behave as if they were above the democratic process. Do they fail to realize that their so-called private funds are gains from the use of public infrastructure and services and from the work, effort, energy, creativity, and sacrifice of Americans in all walks of life? Though they do not recognize this, be assured, the public does.

Like others who are against research that destroys human life, scientists who oppose hESC research are also compelled by the moral conviction that human life must be safeguarded. In addition, some of them recognize that, actually, hESC research cannot be justified on scientific grounds. Effective, long-lasting cell therapy requires adult stem cells. In the body, natural organ and tissue cells undergo a continuous progression from birth, to maturation, to function, and finally to death. Adult stem cells are responsible for the continuous production of new cells to replace ones that have expired. Without adult stem cells, organs and tissues cannot maintain themselves.

In order for promised hESC-based therapies to be successful, first hESCs must be converted into adult stem cells. Thus far, no one has shown this to be possible. The focus of ESC therapy research has been on making mature differentiated cells instead of their adult stem cell parents. Even if adult stem cells were successfully produced from destroyed human embryos, for effective cell therapies, they must then be stabilized and grown to a sufficient number for treatment. Producing adult stem cells in large numbers while stabilizing their restorative tissue function is a singular challenge in stem cell biology, though some recent progress has been made.

So, why destroy human life (or, for the less certain, risk destroying it) when the essential barrier to effective cell therapies is the need for more research to understand adult stem cells? Adult stem cells can be obtained from informed consenting adults, and they already have examples

of successful cell therapies. Bone marrow transplantation is one example of a currently available adult stem cell therapy. Of course, there is still research needed to increase the effectiveness of existing therapies and to develop new ones for chronic debilitating diseases like diabetes and Parkinson's.

Scientists who advocate for research that destroys human embryos are ignorant of the adult stem cell requirement, ignoring it, or hiding it from the public and prospective benefactors. One can only speculate on what motivates our colleagues to do this. I am confident that some have a sincere, though misguided, aspiration to help people suffering from dreaded illnesses. But even this well-intended motivation cannot justify dismissing sound scientific reason.

Scientists promoting hESC research must take care that they do not take advantage of the hopes and fears of people who yearn so desperately for cures that they will regretfully overlook their own moral objections. They do so because they are told that the science is sound and the research will be effective and expedient. The public and potential benefactors must be told that not only is hESC research an eviction of moral thought, it is also a failing of scientific reason.

All the fuss over hESCs has served to reduce funding for all types of stem cell research. The momentum of new growth in knowledge of adult stem cells and their potential for therapeutic application has been very nearly lost due to poor funding as a result of the senseless moral fallout over hESCs. Scientists who aim to bulldoze over the public debate are hurting everyone. It is distressing to hear them give such incomplete accountings of the scientific challenges before promised hESC-based therapies and to ignore the adult stem cell bottleneck altogether. If these problems were discussed more openly, they alone would suffice as the basis for banning any experimentation that requires destruction of human embryos, public or "private."

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