Harmful Moratorium on Stem Cell Research

During the deliberations of the U.S. President's Council on Bioethics, we raised many questions about the comparative usefulness of embryonic and adult human stem cells for treating a host of fatal and nonfatal but debilitating diseases. We never received clear answers, so the prospect of stem cell treatment is largely based on possibilities rather than on persuasive evidence of efficacy. Given the decade-long intense interest of scientists in this research problem, it's fair to ask why we lack convincing data on the use of embryonic stem cells to treat diabetes, Parkinson's disease, and other medical problems.

The answer is hardly surprising: U.S. scientists have been prevented from working on these very critical problems because of a ban on research using cells from human embryos in federally funded projects. Progress in our understanding of human diseases and the development of effective treatments for them has come largely from federally funded research, primarily supported through the National Institutes of Health (NIH). The present congressional ban (instituted in 1994 after an NIH panel established guidelines and oversight that would have allowed such research) has meant that work on the development of embryonic stem cell lines and on the use of embryonic cells has been limited to private and for-profit ventures.* Not only are these efforts relatively small in comparison with those funded by NIH, the results are largely hidden from the general scientific community. Moreover, the benefits are likely to be available to the public in a very restricted manner, usually based on the ability to pay whatever price is asked.

The President's Council, composed primarily of academics, now proposes to maintain our ignorance by preventing any research for four more years.† That proposal is short-sighted: It will force U.S. scientists who have private funding to stop their research, and it will accelerate the brain drain to more enlightened countries.

The recent publication of reports indicating the plasticity of some human stem cells from adult bone marrow has suggested that the problem is solved; that we may not need stem cells derived from embryos. However, even Catherine Verfaille (the author of one such report) emphasizes the continuing need for research on embryonic stem cells to complement continuing exploration of the potential of adult stem cells. Will the latter exhibit the same unlimited capacity for renewal that is present in embryonic cells? Will embryonic and adult stem cells both be suitable for somatic cell nuclear transfer? Will embryonic or adult stem cells be more amenable to manipulation aimed at reducing the problem of immune rejection? These are just a few of the critical questions urgently in need of answers—answers that NIH now cannot allow U.S. scientists to pursue.

The need to fund research on the actual potential of human embryonic stem cells to treat human disease is urgent, and it must be met promptly. Yet research with cells from human embryos requires great sensitivity and careful thought. It thus would be essential to accompany the lifting of the NIH ban with the implementation of an appropriate regulatory mechanism. Every U.S. academic institution has an Institutional Review Board (IRB) in place. The IRB's function is to review all research related to human subjects before a grant can be submitted, thus ensuring that the proposal protects the health, safety, and privacy of the individuals involved in the project. The Guidelines for Pluripotent Stem Cell Research, approved after extensive public comment (more than 50,000 responses) and published in the *Federal Register* in August 2000, proposed the establishment of a Human Embryonic Research Board. This board, to be appointed by the secretary for Health and Human Services, would include consumers, ethicists, lawyers, and scientists knowledgeable in all aspects of human and animal embryonic stem cell research. In proposing to delay research until a board is in place, our Council is trying to reinvent the wheel!

Our ignorance in this vitally important area is profound, and the potential for meaningful medical advances is very high indeed. To realize that potential, we must remove the current impediments to this critical research. Scientists should become more active in urging Congress to lift the ban and to establish the proposed, broadly constituted regulatory board NOW.

Janet D. Rowley, Elizabeth Blackburn, Michael S. Gazzaniga, Daniel W. Foster

Janet D. Rowley is Deputy Dean for Research at the Pritzker School of Medicine of the University of Chicago. Elizabeth Blackburn is in the Department of Biochemistry and Biophysics at the University of California, San Francisco. Michael S. Gazzaniga is director of the Center for Cognitive Neuroscience at Dartmouth College. Daniel W. Foster is chairman of the Department of Internal Medicine at the University of Texas Southwestern Medical School. The authors are members of the President's Council on Bioethics.

*As of August 2001, some embryonic stem cell lines are available for research [see *Science* **297**, 923 (2002)].
†The proposed moratorium applies to the development of new cloned embryos specifically for research purposes.