nature

28 January 1999 Volume 397 Issue no 6717

Towards the acceptance of embryo stem-cell therapies

A quick legislative fix to the question of the use of federal funds for research with human embryo stem cells has been rightly resisted. But clear thinking and communication are needed if the research is to achieve its potential.

The announcement last November of the successful culture of pluripotent stem cells from human embryos opened up the prospect that such cells can be grown into a variety of human tissues and organs, a step with wide medical implications for the treatment of diseases ranging from spinal cord injury to rheumatoid arthritis. Other possibilities include enhanced understanding of birth defects and new ways of testing novel drugs.

Given the scientific vistas thus presented, the frustration of scientists at or funded by the National Institutes of Health (NIH) is understandable: for them, the prospect of engaging in such research has meant addressing the ban introduced by Congress four years ago on research using human embryos. Their gloom has been lifted somewhat by last week's news (see *Nature* **397,** 185; 1999) that, according to legal experts in the Department of Health and Human Services (DHHS), the ban does not strictly apply to research with embryo stem cells. But no one should be fooled into thinking that opponents of all research involving human embryos, however indirectly, are likely to accept such moves meekly.

Unfortunately for researchers and patients, the scientific avenues that now beckon will continue to raise the ire of those who simplistically oppose any medical treatment dependent on the use of cells or tissues from leftover embryos, even those that would otherwise be discarded. In this climate, Harold Varmus, the NIH director, has been right to discourage Republican Senator Arlen Specter from a hasty, if well-meaning, legislative end-run.

Specter had proposed a bill not only formalizing the DHHS's interpretation of the congressional ban, but also specifying that the ban would not apply to the derivation of stem cells from embryos. At present, that is not permitted on NIH funds, creating the morally ambiguous situation that although research with stem cells can be federally funded, the cells must be acquired from a private source. Such a legislative initiative could have inadvertently stimulated a strong anti-NIH backlash, possibly leaving researchers even worse off than they are now; extreme caution is indeed advisable.

But caution is not the same as inaction. It is essential that the NIH now pushes forward vigorously with its promise to draw up firm guidelines to reassure critics of the research that their concerns have been taken into account as far as is possible — for example, by insisting on and policing a clear distinction between therapeutic cloning of cells and cloning for human reproduction, as suggested by Britain's Human Fertilization and Embryology Authority (see *Nature* **391,** 523; 1998). Similarly, there is a heavy responsibility on those who frame the public debate — in particular the media — to be clear in their terminology; to describe research using human stem cells under the generic and emotional description of human cloning, as some reporters continue to do, muddies the waters unnecessarily.

It is also important for the NIH and others to keep building a strong and broad-based political constituency that can effectively challenge those arguing for a ban on all embryo research; the pragmatic and principled argument here must be that the human pain and suffering resulting from such a ban will inevitably outweigh that which would occur if the ban were lifted.

There are substantive philosophical and moral issues which are, quite properly, being urgently addressed, not least by the National Bioethics Advisory Commission. Varmus has already indicated that he is seeking guidance from the commission, the public and Congress — where, for example, a hearing was due to be held on Tuesday — before deciding how to proceed. And there will always be a hard core of critics opposed to any laboratory culturing of human embryo cells. Hopefully, within the majority, a more humane perspective will eventually prevail. The more scientists can encourage and stimulate its emergence, the more likely it is that everyone will benefit. □

Pig in the middle

A moratorium on clinical trials of animal transplants is justified.

Just as the United States and United Kingdom are poised to proceed with tightly controlled clinical trials of xenotransplantation, the Council of Europe has thrown the pig among the pigeons by calling for a moratorium. Pessimists are proclaiming that this spells the death of progress. True, animal models are ultimately no replacement for humans; and the ultimate test of whether a risk of creating new human pandemics exists is to open the door a bit and watch what happens.

But xeno-hype hides the fact that the science is far from the point where it might contribute to easing the organ shortage — the primary justification for pushing ahead. Much basic research remains to be done — and politicians should promise to emphasize that more research is needed every time they mention the moratorium word. There is little good reason to rush into the clinic, even though that would permit companies to reassure investors that their millions of dollars are now in 'clinical trials'. What is more, retrospective analyses of the hundreds of patients xenotransplanted in earlier trials are not yet complete.

The big risk is that although some countries can be expected to enforce stringent controls, the same is not true of all. Once trials become routine they will inexorably result in riskier trials being pursued somewhere using, for example, virus-laden baboons. Public concerns over the risks of xenotransplantation have already obliged the United States to take its scandalously lax original 1996 guidelines back to the drawing board. A wide public and political debate followed by an international agreement must be in place before pigs or any other animals are allowed into the clinic. Meanwhile, the progress in growing human embryo stem cells (see above) may yet yield a better alternative. □