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Bush compromise raises doubts over stem-cell resilience

Jonathan Knight, San Francisco

At last, US biomedical researchers can exhale. After months of delay, President George W. Bush announced on 9 August that he would allow the government to pay for human embryonic stem-cell research — provided the cells used had been made before that date.

But the Bush compromise, which had been anticipated for more than a month (see *Nature* 412, 107; 2001), leaves US stem-cell researchers with a steep technical challenge: to prove the promise of stem cells for treating incurable diseases before the permitted cell lines run out.

Although Bush stated that some 60 cell lines would qualify for grants from the National Institutes of Health (NIH), fewer than 12 are in the published literature. Stem-cell researchers were unaware of the existence of so many others until the announcement. “I am mystified myself as to this number of 60 lines,” says Roger Pedersen at the University of California, San Francisco.

The NIH, which produced the figure for

Bush, insists that the cells exist. “They are out there and we are confident that we will be able to make them accessible to our investigators,” says Lana Skirboll, associate director of science policy at the agency.

Nevertheless, many researchers have expressed doubts as to whether all 60 will be obtainable, or useful. “It’s pretty obvious that the two issues are quality and availability,” says Douglas Melton, chair of molecular and cellular biology at Harvard University.

Currently, only one company in the United States, WiCell in Wisconsin, distributes human embryonic stem cells. WiCell has five lines, all developed by James Thomson at the University of Wisconsin, which it hopes to make available to university researchers for a flat fee of \$5,000.

Two other companies, one in Australia and the other in Singapore, say they have 10 lines between them to distribute. Details of the remaining lines are not yet available.

But access to the materials may be the least of researchers’ worries. More than a decade of experience with mouse stem cells



Government line: George Bush takes advice from top aide Karen Hughes before his speech.

suggests that the lines eventually expire.

Although stem cells divide indefinitely, mutations in their DNA gradually accumulate until the cells no longer function properly, explains Thomas Doetschman, a pioneer in mouse stem cells at the University of Cincinnati. For example, mouse stem cells injected into a mouse embryo differentiate to become part of the adult, but lose this ability after extended growth in culture.

WiCell says that after two years of culturing, Thomson’s original lines are unchanged and completely normal. But this may not be true for all of the 60 lines the NIH claims exist.

Some stem-cell lines last longer than others. Today, most mouse stem-cell work is done with five fairly hearty lines, but to end up with these, researchers had to create and sift through hundreds, says Andras Nagy, a stem-cell researcher at Mount Sinai Hospital in Toronto. “If someone had limited the mouse stem-cell research to 60 lines back in 1985, the knowledge and promises in this field would not have been close to what we have now,” he says.

But some biologists saw the Bush announcement as a useful step forward. Brigid Hogan, a mouse embryonic stem-cell researcher at Vanderbilt University, Nashville, Tennessee, says: “You can get a lot of work done, and if the data start looking good and there are a lot of exciting results, there will be pressure to derive more cell lines.”

Biologists officially welcome plan

Paul Smaglik, Washington

President Bush’s announcement permitting limited research on human embryonic stem cells (see above) was greeted, at least officially, with cautious optimism by American biologists.

The American Society for Cell Biology, the Federation of American Societies for Experimental Biology (FASEB) and the Association of American Medical Colleges (AAMC) each issued statements supporting the policy. However, they tempered that support with concerns that the scientific viability and commercial availability of the available lines will slow the pace of discovery.

But they did not officially voice the community’s latent fear that the policy will severely constrain US stem-cell research.

Before the policy was announced, Tony Mazzaschi, associate vice-president for

research at the AAMC, stated that such a compromise approach “doesn’t make any sense, hold any water, or gain the administration anything”. Yet after Bush’s speech, the AAMC released a statement saying it was encouraged that funding could go forward. FASEB also said it was pleased the research could go forward, “if only in a limited way”.

Arthur Caplan, director of the Center for Bioethics at the University of Pennsylvania, says he is surprised that the scientific community has not been more direct in its response. Because so many limits have been placed on what can be funded, many universities will be reluctant to allow their scientists to pursue the research, he says. “The president effectively sold a ban. The scientific community has decided to accept what can only be called a crumb.”