SCIENCE POLICY

Cloning Bills Proliferate In U.S. Congress

Since members of the Raëlian religious movement announced in March that they plan to clone a baby in the United States (*Science*, 6 April, p. 31), anticloning bills have multiplied in both houses of the U.S. Congress. Several scientific organizations fear, however, that legislative attempts to ban reproductive cloning will also block research on "therapeutic" cloning that aims, for instance, to produce genetically matched embryonic stem (ES) cells and coax them to develop into a specific cell type to treat diseases such as Parkinson's.

Opposed. Senator Sam Brownback (R–KS) would like to outlaw all human cloning in the United States.

That's just what Senator Sam Brownback (R–KS) wants. He has been an outspoken critic of ES cell research as well as cloning because it involves destruction of an embryo. (To produce genetically matched cells, researchers would use nuclear transfer to create an embryo with the same DNA as a patient, allow the embryo to grow for a few days, and then culture a line of stem cells.) Brownback, who presided over a 1 May hearing of the Senate Commerce subcommittee on Science, Technology, and Space, has introduced legislation that would outlaw both types of human cloning, imposing a $1 million fine and 10 years in prison on anyone convicted of transferring a human cell nucleus into an egg.

At the hearing, Carl Feldbaum of the Biotechnology Industry Organization in Washington, D.C., and developmental biologist Rudolph Jaenisch of the Whitehead Institute for Biomedical Research at the Massachusetts Institute of Technology in Cambridge agreed that reproductive cloning would be unsafe and unwise. But they argued that therapeutic cloning holds great promise for treating certain diseases and urged that any legislation allow such work to continue.

Countering that view, several witnesses argued that therapeutic cloning is immoral and unnecessary because, they asserted, stem cells derived from adult tissues are as promising as embryonic cells. Some also argued that therapeutic cloning was bound to lead to reproductive cloning. The hardest task scientifically, said bioethicist Leon Kass of the University of Chicago, is creating the embryonic clone; transferring it to a womb is easy. Kass, who helped draft Brownback's bill, told the hearing that a ban on all nuclear transfer experiments with human cells "is the only realistic chance we have of preventing [reproductive] cloning."

Three of the four other bills introduced to date to regulate human cloning are less draconian than Brownback's. In the House, a bill sponsored by Brian Kerns (R–IN) would prohibit only "reproductive cloning," outlawing the transfer of an embryo created by nuclear transfer into a womb. A second, introduced by Cliff Stearns (R–FL), would prohibit federal funding for therapeutic or reproductive human cloning research. A third, sponsored by Vern Ehlers (R–MI), would outlaw all nuclear transfer in human cells "unless the nucleus of the human somatic cell has been modified so that the cell cannot develop to completion." In the Senate, Ben Nighthorse Campbell (R–CO) has introduced a bill that would prohibit the use of cloning techniques "for the purpose of initiating or attempting to initiate a human pregnancy." Another bill is expected in the next few weeks from Representative James Greenwood (R–PA) that would prohibit reproductive cloning, according to his spokesperson, but allow research on obtaining stem cells.

It is too early to know which bills, if any, might make it to the floor for debate, says David Moore of the Association of American Medical Colleges, much less whether any might pass. Science advocates will be following them closely. –GRETCHEN VOGEL

CREDITS: (TOP TO BOTTOM) DAVID EULITT/*TOPEKA CAPITAL-JOURNAL*/AP; NASA/DLR

STEM CELLS

DFG Gives Embryo Research a Boost

BONN—Germany's main research funding agency issued new guidelines last week paving the way for researchers to import human embryonic stem (ES) cells from other countries. The Deutsche Forschungsgemeinschaft (DFG) also recommended that Parliament pass a law, if needed, that would allow German researchers to derive their own stem cell lines from surplus embryos from in vitro fertilization (IVF) clinics. "The new guidelines are an important step ahead," says Oliver Brüstle, a stem cell researcher at Bonn University. "This is more than we hoped for 1 year ago."

But scientists hoping to start working with these cells may still have to wait. Germany's

ScienceScope

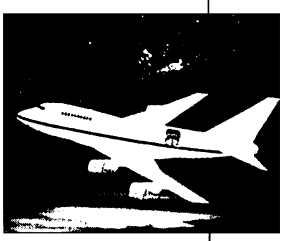
Megamerger Advances A major science publishing merger has cleared a key regulatory hurdle. Anglo-Dutch publishing giant Reed Elsevier said this week that the U.S. Department of Justice will not challenge its $4.45 billion acquisition of U.S. publisher Harcourt General. Research librarians had asked regulators to block the deal, which will give Elsevier control of more than 1500 journals, saying it will drive up prices (*Science*, 3 November 2000, p. 910).

The Association of Research Libraries in Washington, D.C., which represents 120 of the largest research collections in North America, expressed disappointment with the decision. But officials noted that U.K. officials must still sign off on the merger.

Thinking Again Criticism from researchers has prompted the World Medical Association (WMA) to reconsider new guidelines that would restrict the use of placebos in clinical trials. The group last week announced that it will review its 6-month-old interpretation of the Declaration of Helsinki, which urges researchers to avoid using placebos and instead provide test volunteers with either an experimental therapy or the best available current therapy (*Science*, 20 October 2000, p. 418).

But some experts have strongly objected, saying that approach would make it difficult to test certain new drugs. In response, the WMA will "investigate whether the guidelines are likely to restrict good, ethical research in any way," says WMA Secretary-General Delon Human. If rewording is needed, the matter will go to the WMA general assembly this fall.

Grounded A joint U.S.-German flying telescope won't get off the ground until December 2004—2 years later than scheduled. Costs for the Stratospheric Observatory for Infrared Astronomy (SOFIA) have taken off, however. NASA officials say the price of SOFIA, which will put a 2.5-meter infrared telescope aboard a modified Boeing 747 (above), has risen more than 20% to $366 million. Skyrocketing labor costs and technical difficulties are to blame, NASA Administrator Dan Goldin told a House panel last week.



Research Ministry has asked the DFG to postpone funding for a proposal Brüstle has submitted—the only research project proposed to date that would use imported ES cells—to allow more time for discussion. Social Democrats and opposition politicians, as well as church officials categorically opposed to research involving human embryos, quickly assailed the new guidelines.

Stymied. Oliver Brüstle's ES cell project is still on hold.

Currently, Germany's Embryo Protection Act allows researchers to harvest stem cells from aborted fetuses but not from blastocysts, embryos that are 4 to 7 days old. The new guidelines, unveiled by DFG president Ernst-Ludwig Winnacker and endorsed unanimously by the agency's 39-member senate, allow DFG-funded scientists to import ES cells derived legally in foreign labs from surplus IVF embryos. That's a big change from the DFG's initial guidance on ES cell research, issued in March 1999, which counseled scientists to avoid doing research on human ES cells. The DFG has also recommended that an independent commission examine the ethics of research projects involving human ES cells in both publicly and privately funded labs.

If the import of ES cells does not satisfy scientific demand, the DFG recommends that Parliament amend the 10-year-old Embryo Protection Act to allow German researchers to derive their own ES cells from surplus IVF embryos for 5 years. The creation of human embryos solely for use in research, as well as therapeutic cloning—in which a nucleus of a somatic cell is transferred into an enucleated egg cell—would remain off limits.

Last February, the DFG established a 6-year, $2.3 million program to explore the value of human stem cells of all kinds for cell and tissue transplantation. Nearly all researchers who have received grants under this program work on adult stem cells or on animal models. Only Brüstle's team has applied for funding for the use of imported human ES cells. His group wants to explore how neural precursors can be cultivated from human ES cells and purified from other cell types. This would follow up on work in which Brüstle transformed mouse ES cells into functional neural cells.

The DFG has not yet approved Brüstle's project, which was submitted for funding 10 months ago. He had hoped for a decision last week, but after the guidelines were unveiled, the Research Ministry announced that it would urge the DFG to postpone a decision on Brüstle's application. "The far-reaching changes suggested by [the DFG] need to be discussed broadly in science and society," said research minister Edelgard Bulmahn. She has suggested that the National Ethics Council, a new body appointed on 2 May by Chancellor Gerhard Schröder, examine the ethical and legal framework for research on human ES cells before any project proceeds.

Officially, the DFG is not bound by the Research Ministry's directives. But federal and state governments provide the bulk of the DFG's budget, and government representatives make up almost half the agency's grants committee. German researchers are watching with interest to see how the DFG responds.

–SABINE STEGHAUS-KOVAC

Sabine Steghaus-Kovac is a science writer in Frankfurt.

GERMANY

Scientists Rebel Against Research Overhaul

HEIDELBERG—A proposed overhaul of the way Germany's national research centers are funded has sparked a massive protest backed by a Nobelist and a former research minister. As the government's plan heads for a showdown later this month, more than 4300 scientists and other staffers at the centers have signed a petition to research minister Edelgard Bulmahn denouncing the overhaul as a threat to scientific freedom. "If you take away the freedom of the scientists at the institutes, it will downgrade the quality of the research," argues Peter H. Krammer, a molecular immunologist here at the German Cancer Research Center (DKFZ).

The DKFZ and 14 other research centers comprise the Helmholtz Association, whose 8000 scientists constitute Germany's biggest scientific workforce outside the university system. Federal and state research ministries spend about $1.5 billion a year on the centers, with grants bringing the total to about $2 billion. For 2 years, the Research Ministry has been negotiating with Helmholtz officials in an effort to wean the centers off block grants and instead fund program areas, from biomedical research to the structure of matter, spanning several centers. Germany's top scientific advisory body, the Science Council, outlined the concept of program-oriented research in a January report that drew on recommendations from a 14-member panel of German and international experts (*Science*, 26 January, p. 570). Bulmahn told *Science* that "the goal is, on one hand, to increase competition among the centers that work in similar research fields, and, on the other hand, to increase cooperation."

That's not how Krammer and other critics see it. They argue that the reorganization would cede too much control over research specifics to the ministry. A separate protest letter signed by Krammer and 40 other leading DKFZ scientists foresees mounting bureaucratic hurdles to doing science. Although he signed neither letter, DKFZ chair Harald zur Hausen says he fears that "the increasing bureaucracy linked with the present plans will have a negative impact on the quality of scientific research at the national research centers." Bulmahn's predecessor, Jürgen Rüttgers, told the *Süddeutsche Zeitung* newspaper last week that the Research Ministry "should not take the position that bureaucrats know better than the scientists." And Nobelist Günter Blobel, a German-born cell biologist at Rockefeller University in New York City, also blasted the plan in an interview in *Der Spiegel* magazine, saying that the concept reminds him of inflexible Soviet-style planning.

Bulmahn and a deputy minister, Uwe Thomas, counter that the proposed shift to program-oriented funding would breathe new life into the research centers by making the scientists compete for baseline funding. "I'm convinced that it would give centers more freedom and increase the quality of the research," says Thomas.

Caught in the middle is the Helmholtz leadership. "Science-driven, theme-oriented financing can be a positive development"—as long as the ministry agrees to longer term budgeting and gives centers the flexibility and freedom to develop projects within the main research categories, says Helmholtz chair Detlev Ganten, who heads the Max Delbrück Center for Molecular Medicine in Berlin. But Albrecht Wagner, scientific director of the DESY particle physics center in Hamburg, says: "I'm worried that the way the program-oriented funding is implemented might lead to a real loss in the

Freedom fighter. Peter Krammer fears a bureaucratic morass.

CREDITS: (TOP TO BOTTOM) R. KOENIG; GERMAN CANCER RESEARCH CENTER