curve—no doubt about it." He declines to give a preview of what his immediate goals will be, insisting that those will be up to Clinton and Gore.

He will be entering a radically different environment in the White House from the one Gibbons inherited when he took the job in 1993. In the past 6 weeks, Clinton and Gore have been crossing the country sounding their revamped R&D theme praising basic research. The proposed 1999 boost in overall funding, Clinton said in Philadelphia, is "providing for the first time a strong, stable, multiyear source of funding for research." NSF would get a 10% increase, which excites even the normally placid Lane. "It's a great time to be a scientist," he said on 2 February in unveiling the request. "It's even a great time to be a science bureaucrat." The proposed boost wins Lane plaudits. "He's convinced the White House that NSF deserves equal billing with NIH as a major funding agency for basic research," says Howard Silver, head of a consortium of social science organizations that advocate for NSF. "That's no small achievement."

Besides stumping for increased research funding, Lane will have to grapple with several politically charged and divisive issues. Bills to restrict human cloning, for example, have sparked bitter debate (see next story), while Senate Republicans are refusing to consider the Comprehensive Test Ban Treaty, which Clinton wants ratified. And Republican and Democratic lawmakers in Congress remain staunchly opposed to ratification of the Kyoto pact, made last December, which is designed to limit the production of greenhouse gases (see p. 1124).

In addition, Lane will face Republican skepticism toward applied research efforts, which are not his specialty. "Neal is very strong in the basic research area, but in some areas involving applications—like energy, climate change, biodiversity—we will want to work closely with him," says Holdren, a member of the President's Council of Advisers on Science and Technology. Lane notes that while he has focused on basic research as NSF chief, "these lines are not very sharp, and the division between basic and applied science is not a very clear one."

But the toughest task for Lane and Colwell may be ensuring that fractious scientific disciplines work closely together—in both their research endeavors and their efforts to win a large funding boost in coming years. Forging those ties will be hard, Colwell acknowledges, given that each science has its own culture and jargon. Colwell, who is married to a physicist, says "We have to create a new language. That's the real challenge."

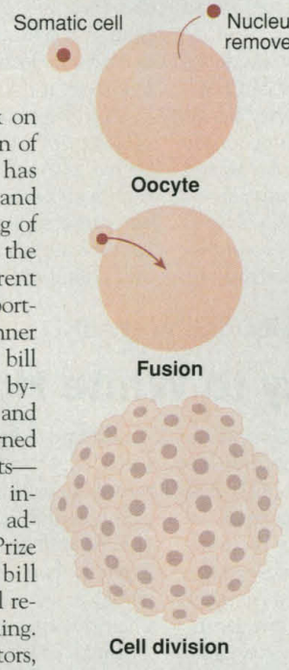
–Andrew Lawler

With reporting by Jeffrey Mervis.

SCIENCE AND POLITICS

Biomedical Groups Derail Fast-Track Anticloning Bill

The research community is not known as a powerful political force. But last week, biomedical groups demonstrated surprising muscle—and lobbying tactics that would have made the most seasoned Washington insider proud—when they derailed legislation moving on a fast track through the U.S. Senate. Their target: a bill that would have made it a crime to clone humans with the technology used last year to make Dolly, the world's most famous sheep.



Off limits? Senate bill would prohibit somatic cell nuclear transfer with human cells.

The research groups took on quite a challenge. The notion of outlawing human cloning has widespread popular appeal, and the bill itself had the backing of the most powerful man in the Senate, Majority Leader Trent Lott (R–MS). Indeed, its supporters were so sure they had a winner that they tried to bring the bill straight to the Senate floor, bypassing committee hearings and debate. But Lott's tactic, it turned out, was a mistake. Opponents—including scientific societies, industry organizations, patient advocacy groups, and 27 Nobel Prize winners—argued that the bill would block basic biomedical research as well as human cloning. They won over enough senators, including such unlikely bedfellows as Strom Thurmond (R–SC) and Edward Kennedy (D–MA), to put off a vote.

It was a sharp loss for the Republican leadership, forcing Lott to withdraw the legislation. Says one Republican aide: "Nobody takes pleasure in handing the Majority Leader a defeat." The battle is far from over, however, as the Senate bill may reemerge and other anticloning bills are also circulating in Congress. But last week's showdown set the stage for a coming debate—and provided an object lesson in the hardball politics of biomedical policy.

Momentum for a cloning ban began building in January, as members of Congress returned from a long winter break during which they heard that Chicago physicist Richard Seed was trying to raise money to clone humans (*Science*, 16 January, p. 315). President Clinton added to the clamor in his State of the Union Address on 27 January by calling for legislation to block human cloning. Some members of Congress wanted to seize the initiative.

According to staffers of several biomedical interest groups, conservative Senators Judd Gregg (R–NH) and Kit Bond (R–MO) met with Lott in late January to push for speedy action. Bond suggested they support a bill he had introduced last year during the Dolly furor. It would outlaw not just the creation of humans by cloning, but any research involving human eggs and the process of somatic cell nuclear transfer. This process—which was used to create Dolly—removes the nucleus of an egg and replaces it with the nucleus of another cell. The embryo is then stimulated to grow.

The conservatives gained an important ally in Senator Bill Frist (R–TN), a former transplant surgeon who heads the public health and safety subcommittee. With Lott's blessing, Frist and Bond co-sponsored a new version of Bond's bill (S. 1601), proposing to make human somatic cell nuclear transfer illegal, punishable by a 10-year prison sentence. The bill would also create a 25-member national commission to report on ethical issues in biomedicine. Lott himself introduced the bill on 3 February.

Biomedical organizations quickly mobilized. Many researchers had expressed concern about Bond's bill last year, arguing that the cloning procedure it would outlaw might be used to produce not just embryos but primordial stem cells, which future technology might convert into transplantable bone marrow, skin, or other tissue. They also worried that the bill would broaden and extend the current moratorium on research done with human embryo cells. Sean Tipton, a spokesperson for the American Society for Reproductive Medicine, broadcast an appeal for help over the Internet. Tipton warned that under the guise of preventing human cloning, some members of Congress were making "a serious attempt … to permanently enact an embryo research ban." He asked the community to "stand up and be counted" in the name of "the freedom of scientific inquiry."

The Pharmaceutical Research and Manufacturers of America (PhRMA), an associa-

tion representing large drug companies, joined the fray. It sponsored a press conference on 6 February at which PhRMA scientist Gillian Woollett warned that passage of S. 1601 could cast "a pall over a whole area of research," scaring away researchers who might use somatic cell nuclear transfer to develop skin cells for burn victims, bone marrow for cancer patients, and neuronal cells for people with spinal cord injuries. Herbert Pardes, dean of the Columbia University College of Physicians and Surgeons, and Heather Fraser, a patient spokesperson for the Cystic Fibrosis Foundation, argued that outlawing research would set a dangerous precedent. In parallel, the Biotech Industry Organization and about 70 patient advocacy groups and professional societies added their voices to the chorus.

But perhaps the weightiest blow was delivered on 9 February, when the American Society for Cell Biology distributed a letter signed by 27 Nobelists, including several from outside biology, such as economist Kenneth Arrow and physicist Douglas Osheroff of Stanford University. It declared "a broad consensus" in favor of banning human cloning through a voluntary moratorium. If anticloning legislation must be passed, they said, it should apply only to the creation of human beings, not embryos, and should "not include language that impedes critical ongoing and potential new research." Speaking for the group, biochemist Paul Berg of Stanford told *The New York Times*, "The Bond-Frist bill is clearly going to block very important research."

The opponents already had two important allies in the Senate: Senators Kennedy and Diane Feinstein (D–CA). These two had introduced an alternative bill (S. 1602), crafted with the advice of biomedical groups. The Feinstein-Kennedy bill would, for 10 years, make it illegal to implant into a woman's uterus an embryo created by cloning techniques such as somatic cell nuclear transfer. But their bill would not outlaw research on human somatic cell nuclear transfer. When Lott tried to bring the Bond-Frist bill to a vote, Feinstein and Kennedy began a filibuster.

A filibuster can be broken only if at least 60 senators vote to end debate. Lott appealed to his fellow Republicans to back him on such a vote—a plea that would normally get automatic support. This time, it didn't. Senator Connie Mack (R–FL), a cancer survivor and champion of biomedical research, convinced that it would be a mistake for the Senate to vote on the bill without hearings, persuaded 11 other Republicans to join him in blocking Lott. They added their number to 42 Democrats. The majority included Thurmond, who spoke with emotion of his hope that basic research might help his diabetic daughter, urging that no laws be placed in the way. Lott's motion failed by a vote of 54 to 42, and the bill was put aside. Says Tipton: "We've dodged the first bullet."

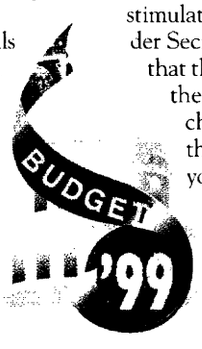
The next day, in the House of Representatives, the Commerce Committee began reviewing a range of proposals for a ban on cloning. Neither the Republican nor Democratic members seemed in a hurry to send legislation to the floor, however, as they heard from religious leaders and probed the meaning of words such as "embryo," "somatic cell," and "human life." The Senate Republican leadership had not made a decision at press time whether to send the Bond-Frist bill to committee for additional review. A spokesperson in Bond's office said only that the bill had been withdrawn from debate, but could be brought back "at any time." The legislation has been shunted off the fast track, perhaps, but not derailed.

–Eliot Marshall

GLOBAL WARMING

House Panel Icy to White House Plans

The relationship between the Administration and Congress on R&D spending has been warming in recent months, but there is still a chill in the air when it comes to global change and government-industry technology partnerships. Combine the two—as the Administration has in arguing for a big technology-development program to cut greenhouse gas emissions—and relations can get downright frosty.



Top Administration science officials certainly got a cool reception from some House Republicans last week, when they went before the House Science Committee to defend their plans to implement a United Nations protocol to reduce greenhouse gases. Committee Chair James Sensenbrenner (R–WI) sparred with Jack Gibbons, the president's departing science adviser, on whether a global-warming threat exists; on the terms of the protocol, signed in Kyoto, Japan, in December; on a request for $2.7 billion in climate change–related research and technology programs over the next 5 years; and on how the White House plans to fund those programs.

Gibbons testified that the Administration wants to spend nearly $900 million more in 1999 to manufacture more efficient cars and building equipment, boost spending for solar and renewable energy work, and conduct research into reducing carbon output from fossil fuels. That would more than double the current spending level of $819 million at a host of agencies led by the Department of Energy (DOE) and the Environmental Protection Agency. For 1999 to 2003, the investment would be $2.7 billion above the 1998 level. Over the same period, the White House also wants $3.6 billion in new tax credits to stimulate industry innovation. DOE Under Secretary Ernest Moniz told the panel that the plan is intended to alter the way the United States copes with climate change: "The Chinese proverb says that if you don't change directions, you'll end up where you're headed."

Sensenbrenner promised to keep "an open mind" on the initiative. But he noted that some of the programs are "retreads" from the late 1970s, and others are what Republicans call corporate welfare because they would provide federal funding to industry. He insisted that the initiative be considered separately from the Kyoto pact, and that it should support only long-term, well-managed, high-risk efforts. He also criticized the White House's plan to pay for a portion of the program with money from a settlement between state and federal governments and tobacco companies. Even Representative Sherwood Boehlert (R–NY), who is sympathetic to the Administration's plan, complained that the president's budget is "built like a house of cards."

One of the sharpest exchanges came when Sensenbrenner, sensitive to charges that his party is ignoring a major global threat, asked Gibbons, "When are you guys and ladies going to stop making us into the bad guys?" Gibbons replied icily, "That is an unfair cut." After the hearing, Gibbons dismissed Sensenbrenner's attack as political posturing. "I suppose the chairman is trying to figure a way to differentiate the Republican view from the Democratic view in an election year," he said.

But that distinction may not be important this year. A majority in Congress apparently feels that the threat of global warming remains vague and that the Kyoto agreement—which would require the United States, by 2012, to cut emissions by 7% from their 1990 levels—could stifle economic growth and lead to a surge in prices. Given that opposition, the president is not expected to submit the treaty for Senate ratification until 1999 at the earliest.

Less controversial is the Administration's global-change research program, which would remain level in 1999 at $1.86 billion. Much of that is for NASA's Earth Observing System satellites, while $767 million is set aside for research. Despite the fact that some Republicans are skeptical of its value, the program has avoided cuts in recent years and is likely to do so again in 1999.

–Andrew Lawler