NATIONAL ACADEMIES

NRC Lets a Little Sun Shine In

Change is hard for any organization, but officials at the National Research Council (NRC) have decided that, if it is inevitable, they'd rather be calling the shots. Faced with the prospect that the courts eventually could force it to abide by strict government rules on openness, the council recently approved new guidelines intended to open its inner workings "to the greatest extent possible." But the new rules fall far short of the government rules, and they appear unlikely to quiet critics.

The new policy has been in the works for more than a year at the NRC—the operating arm of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine that produces authoritative reports for those who make public policy (*Science*, 9 May, p. 900). But progress toward openness had been slowed by internal dissent. Early this year, however, environmental and animal-rights groups scored victories in two court cases that challenge the traditional secrecy with which the council does business (*Science*, 17 January, p. 297).

The groups want the NRC to abide by the Federal Advisory Committee Act (FACA), which specifies policies that government agencies using outside counsel must follow to ensure public input. In one case, a federal court refused to allow the U.S. Department of Energy to use an NRC report it requested; in another, the court has agreed that the council should have abided by FACA in conducting an animal case study for the National Institutes of Health. NRC officials intend to appeal the latter case to the Supreme Court, says Executive Officer William Colglazier. The officials worry that the cases might end with a ruling forcing them to adhere to FACA.

Given these external threats, "this time there was very little opposition" to the openness guidelines, says Colglazier. The council's governing board adopted the measures on 14 May.

Until now, meetings to discuss or prepare NRC reports typically were closed to all but committee members and staff. The rationale was that publicity could damage the institution's reputation for independence and fairness. The new policy, however, says that the council's work "can benefit from increased public access and increased opportunities for public input" at those meetings in which panel members are gathering information. That openness must be balanced by assurances that "committees and panels are shielded from undue pressures."

"The institution retains the right to close meetings as appropriate," the policy states, "to conduct work free from external influences." But Colglazier says there must be compelling reasons for a committee to operate in private. "We will make it extremely rare that information-gathering meetings are closed," he says. Panel members also will be expected to discuss their potential biases during an open session at the start of their work.

The policy went into effect immediately. Last week, the NRC set up a World Wide Web site to provide up to 2 months' notice of open meetings (www2.nas.edu/whatsnew/events.html).

While the new rules reflect a major change from past practices, they fall far short of the FACA requirements. Under that law, all sessions of advisory panels must be open, unless they involve classified or proprietary material or personnel matters. Agency chiefs cannot overrule the law, although federal advisory committees often skirt the rules by holding closed-door executive sessions.

Colglazier says the new rules are not designed to placate the courts or critics, but he hopes they "will buy us some goodwill" among opponents. However, that might be wishful thinking. "The effect [of the new policy] is minimal," says Valerie Stanley, legal counsel for the Animal Legal Defense Fund, which is suing the National Institutes of Health over its sponsorship of an NRC study on animal protection that followed the usual council procedures. "The meetings in which they set policy won't be open, and that's at the heart of what they do."

–Andrew Lawler

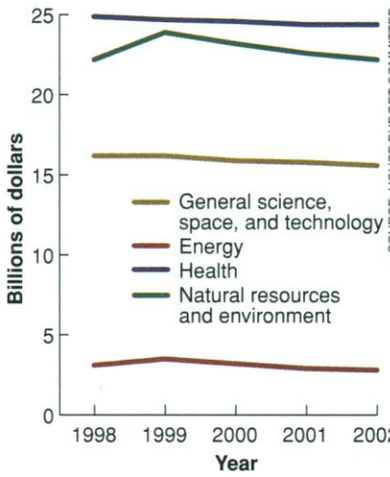
1998 BUDGET

Five-Year Plan Squeezes R&D

The dust surrounding the historic budget agreement between the Administration and Congress is starting to settle, and the emerging picture is not a pretty one for science and technology spending. A long-term budget plan based on that agreement was approved last week by the House and Senate, and it leaves no room for an R&D funding increase in the next 5 years. While the projections are far from immutable, they are raising concerns among R&D supporters in Congress.

The budget resolution, which sets broad spending guidelines for the next 5 years, is the result of a bipartisan attempt by President Bill Clinton and Republican leaders to cut taxes and eliminate the federal deficit by 2002. That political consensus makes the resolution a more significant document than previous versions, which were based on one party's view of the future. And its message to scientists is that civilian R&D does not fare well. "They protected a lot of things, but R&D was not one of them," says Al Teich, science policy director at the American Association for the Advancement of Science (AAAS, which publishes *Science*). Of course, such projections are notoriously changeable, and the appropriators who actually allot program funding have substantial freedom each year to fund what they see fit.

If the numbers in the resolution come to pass, warns House Science Committee Chair James Sensenbrenner (R–WI), "we'll be spending less in 2002 on scientific research ... than we did in 1991" after taking inflation into account. That reduction is the result of a decision to erase the deficit largely by reducing domestic discretionary spending, the account which includes all civilian science and technology. The budget resolution calls for a freeze or slight decrease in most R&D-related accounts as part of that effort. The only R&D-related area that the Administration and Congress singled out to protect is the Commerce Department's National Institute of Standards and Technology, which oversees the controversial Advanced Technology Program. ATP has been the object of a tug-of-war between some Republicans, who see it as corporate welfare, and the president, who regards it as a vital link between government and industry.



Flat-lined. R&D doesn't even keep up with inflation in the budget resolution.

Funding for the natural sciences, including research at NASA, the National Science Foundation, and physics programs within the Department of Energy (DOE), would take a "pretty significant hit" under the plan, says Sensenbrenner, who told a recent meeting of science writers that he was "dismayed" by the numbers

and will put up a fight. Funding for the bulk of science and technology efforts at those agencies would fall $400 million in 1998 to $16.2 billion, and continue dropping until it reached $15.6 billion in 2002.

The account that includes the National Institutes of Health would also decline from $24.9 billion to $24.4 billion. But biomedical research has numerous and powerful supporters in Congress who will seek to turn those numbers around. Last week, the Senate unanimously approved a nonbinding resolution drawn up by Senator Connie Mack (R–FL) that the "federal commitment to biomedical research should be doubled over the next 5 years." It also calls for an immediate down payment of an additional $2 billion for 1998. However, 2 days later, the same body voted 63–37 to kill an amendment to the budget bill that would have increased NIH funding by $1.1 billion in 1998 by taxing the administrative budgets of other agencies. That sets the stage for an intense battle over health funding later this year. "We are disappointed" by the budget bill, says John Suttie, president of the Federation of American Societies for Experimental Biology, which hopes that legislators will deliver on earlier promises for a bigger increase.

Civilian DOE spending, including nonphysics work sponsored by DOE at labs and in academia, also suffers a decrease in the plan, falling from $3.1 billion in 1998 to $2.8 billion in 2002. Funding for natural resources and environmental research would rise from $22.2 billion in 1998 to a peak of nearly $24 billion before returning to $22.2 billion by 2002.

R&D advocates generally put on a brave face last week, saying they will fight to prevent the cuts outlined in the resolution from becoming a reality. "Science will not become the type O [universal] blood donor," says the science chair, who recently took his case to House Speaker Newt Gingrich (R–GA). On the Senate side, Senator Phil Gramm will "forge ahead with" his plan to double the amount of civilian government research over 10 years, from $32.5 billion to $65 billion in 2007, says his press secretary, Larry Neal. But the resolution "will make our job more difficult," he admitted.

For all its sobering news, the budget resolution hasn't created panic in the R&D community because it is unlikely to be followed to the letter. "There's a fair amount of flexibility" in how Congress ultimately allocates taxpayer dollars, says Teich. And the vagueness of the plan makes it hard to tease out its possible effects on individual programs. But one thing is clear: R&D will face an increasingly hard struggle to hold onto its share of the federal spending pie over the next 5 years.

–Andrew Lawler

With additional reporting by Eliot Marshall.

CONSERVATION BIOLOGY

Can Cloning Help Save Beleaguered Species?

When Kurt Benirschke launched a program at the San Diego Zoo in 1975 to freeze cells from endangered species, he assumed that his colleagues would use the collection to unravel complex issues such as the genetic similarities among animals. Never did he imagine that scientists might one day pluck cells from the "frozen zoo" to grow new animals from scratch. But since February, when researchers in Scotland reported they had cloned a lamb named Dolly from the cells of an adult sheep, the notion of cloning a Przewalski's horse, Sumatran rhinoceros, or one of the other rare species whose cells are banked at the San Diego Zoo's Center for Reproduction of Endangered Species (CRES) has suddenly left the realm of science fiction.

"The possibilities for zoos are enormous," says Benirschke, a reproductive biologist who now is vice president of the zoo. Like other zoologists, he recognizes that many scientific hurdles stand between a fibroblast—a tissue-repairing cell that makes up the bulk of the frozen zoo's collection—and, say, a healthy infant rhino (see sidebar). But he thinks the field has seen so many remarkable advances in recent years that the obstacles, for some species at least, are likely to fall. Says CRES geneticist Oliver Ryder, "I think [cloning] is going to produce a paradigm shift. It offers the potential for a better safety net than we thought we had." Adds Benirschke, who began working with colleagues in China after Dolly's creation to save cells from the endangered Yangtze River dolphin, "I would love to excite the international community to save as many cells as they can from as many animals as possible."

But even if the technical hurdles do fall, many conservation biologists argue that efforts to clone endangered species would be so expensive that they could derail other conservation efforts. "In the end, the very finite resources that conservation has are better directed elsewhere," contends Michael Bruford, a molecular geneticist at the Zoological Society of London's Institute of Zoology. Adds David Wildt, head of reproductive physiology at the U.S. National Zoo's Conservation and Research Center in Front Royal, Virginia, cloning should be viewed only as a "last, desperate attempt to try to preserve a given species."

Ryder argues, however, that cloning may offer benefits that are not immediately obvious. When people think of cloning, they often imagine legions of genetically identical individuals. But Ryder contends that the technology actually could be used to increase the genetic diversity of a dwindling species—a proposition that has taken some of his colleagues by surprise. Population geneticist Robert Lacy of the Brookfield Zoo in Illinois, for instance, says he was skeptical that cloning could enhance genetic variability, which, he notes, is "the primary thing we're trying to do with endangered species." But he was persuaded, he says, after reading Ryder's ideas on a private Internet chat group for population biologists.

R. GARRISON/ZOOLOGICAL SOCIETY OF SAN DIEGO

Cold comfort. Some scientists say cells banked at the San Diego Zoo's Center for Reproduction of Endangered Species *(above)* and other "frozen zoos" can be used to preserve rare animals.

Ryder reasons that for species that are down to just a few surviving individuals, clones grown from frozen fibroblasts could provide an invaluable source of "lost" genes. Suppose scientists could clone Asian wild horses, South China tigers, or Spanish ibex from cells in the CRES collection that were gathered from long-deceased animals, says Ryder. The clones theoretically would then be able to breed, reintroducing the lost genes back into the population. "It might allow you to go back and recover the genetic diversity," he says.

Ryder also argues that cloning could be an especially useful tool for biologists trying to save species that don't breed well in captivity, such as giant pandas. The more offspring an animal has, says Ryder, the more of its genome it will pass on. If a giant panda in a zoo has only one offspring, one half of the panda's genes are lost. But if biologists could clone the panda 10 times and each one produced an offspring, in effect, the original panda would have produced 10 offspring, and fully 95% of its genetic