NATIONAL ACADEMY OF SCIENCES

Members Seek More Active Role

Each year, scientific organizations issue thousands of reports, most of which slip quietly into oblivion. But those from the National Research Council (NRC) are more likely to be noticed because they come with a stamp of approval from the country's most prestigious scientific bodies—the 1658-member National Academy of Sciences (NAS), the 1304-member National Academy of Engineering (NAE), and the 478-member Institute of Medicine (IOM). Some disgruntled NAS members complain, however, that NRC reports don't necessarily represent that august collection of scientists because only 14% of those serving on NRC panels are members of one of the three bodies. (Panel members are selected because of their expertise in the field under review.)

That underrepresentation prompted a minor uprising at NAS's annual meeting in Washington last spring. A small group of members, led by Massachusetts Institute of Technology (MIT) meteorologist Richard Lindzen, proposed changing the organization's bylaws to require as many as half the slots on the roughly 900 NRC committees that conduct most of the academy's business to be filled with NAS members. (Only 6% of those now on NRC panels are NAS members.) Incoming NAS president Bruce Alberts, who took office on 1 July, successfully convinced Lindzen and his allies that the requirement would "tie his hands," but he promised to look into the matter and take action before the next annual meeting in April.

Barely 6 months into his term, Alberts has decided that the issue is worthy of his attention, and he's moving ahead on several fronts. "We've been remiss in not going after more members," he says. "We need to connect better."

The most significant change is the designation of a liaison to the council from each of the NAS's 18 disciplinary sections. The liaisons will propose panelists for upcoming NRC reports, although NRC staff will retain responsibility for the composition of each panel. Alberts also plans to describe upcoming NRC activities in an existing NAS newsletter, and he's considering an in-house electronic bulletin board for members via Internet. In addition, all new inductees will be required to attend an orientation session on the NRC. That last move is intended to avoid the kind of embarrassing situation that resulted several years ago when Alberts, a NAS member since 1981, was first asked to serve on an NRC panel: He confessed he didn't know what the NRC was.

Those steps may not be enough for the 15 or so members most critical of the status quo, especially Lindzen and agricultural scientist Paul Waggoner of the Connecticut Agricultural Experiment Station. Their unhappiness also stems from personal experience with the NRC. Waggoner, for example, was chairman of a 1991 panel that concluded the U.S. could adapt fairly easily to gradual global warming, a position that generated a written dissent by a non-NAS member of the panel, and Lindzen has criticized NRC reports for overstating the potential impact of global warming.

Taking stock. Alberts wants greater participation.

The critics argue that the quality of the NRC reports would be improved with the addition of more academy members. "If it's called an academy committee, then the academy better have a lot to do with it," says Yale physicist Robert Adair, a prominent skeptic of the notion that low-level electromagnetic fields may pose health risks. Waggoner sees the NRC as a "Supreme Court" of science policy with members chosen for their wisdom and distinguished careers. "That's the way I think [President] Lincoln intended it to be," says Waggoner, referring to the 1863 act that created the NAS to advise the government on science.

Such ideas may sound reasonable in theory, responds Alberts, but they "don't work" in practice. About one-fourth of the 1600 members now serve on NRC panels, he says, and he estimates that 800 of the remaining 1200 "don't want to participate" or are too busy to serve. Moreover, he notes that reliance on NAS members—mostly older white males—would reduce opportunities for "rising young stars," women, and minorities. "We're never going to have half our committee memberships from the academy without scaling back what we do," he says.

But a smaller NRC would be fine with the critics. If there aren't enough qualified members to serve on a committee, says Adair, "then don't do the report."

Alberts says he has no plans to shrink the NRC, but he's looking for advice. Last month he sent out a 10-page survey to each member soliciting ideas on ways to improve the academy. In the meantime, those pushing for change say they'll hold their fire until the annual meeting in April.

–Robert Langreth

Robert Langreth writes for Popular Science.

REGULATION

German Geneticists Get Some Relief

BONN—German geneticists got a New Year's present this week, when the federal government enacted changes to the notorious gene technology law that has severely hampered genetic research in the country. The reams of forms and applications that researchers have had to fill out for even minimal-risk lab experiments with recombinant DNA have been dispensed with. Gone also are almost all the mandatory public hearings—often manipulated by environmental campaigners to create the maximum disruption—that were a prerequisite for any release of altered DNA into the environment. From now on, most researchers will simply have to submit written statements instead.

Research organizations and the pharmaceutical industry have bitterly complained about the gene technology law, which has been in force since 1990 (*Science*, 31 January 1992, p. 255), and they are delighted that the government has heard their pleas. Detlev Ganten, Head of the Max Delbrück Center for Molecular Medicine in Berlin, called the changes in the law "a big advantage" for his institution. The Association of the Chemical Industry welcomed them as an "important contribution to increasing Germany's attractiveness for research and production."

The gene technology law was originally supposed to protect people and the environment and to provide a legal framework for the advancement of the new technology. But pharmaceutical companies have claimed that the regulations have driven research out of the country. Indeed, industry spends close to 1 billion marks ($584 million) each year on research involving recombinant DNA technologies, but companies such as Hoechst and Bayer invest only 25% of that money inside Germany. Instead, they have opened new R&D facilities in the United States and Japan. Moreover, there have been only five experiments involving deliberate release carried out in Germany so far.

The new law dispenses with the need for formal approval for experiments involving organisms such as the bacterium *Escherichia coli* or yeast, which are classified as security level 1, or posing "no risk." In some cases over the past 3 years, such experiments required nearly 100 forms; now a simple notification will do. For experiments on class 2 organisms ("little risk"), such as fungi of the genus *Aspergillus* and the hepatitis B virus, official approval procedures have been reduced to 1 month; formerly it could take anywhere from 3 months to a year. Under the

old law, recombinant plasmids and other genetically modified research materials could not be exported outside European Union (EU) countries. Taken to its logical limit this meant that a patient who had undergone gene therapy was barred from leaving the EU. International exchange of altered DNA is now permitted without restriction.

Public hearings on deliberate release experiments used to degenerate into media circuses and gave environmental groups ample opportunity to hinder the approval process. Last spring in the northern town of Einbeck, for example, some 20 campaigners turned up at a hearing dressed as giant sugarbeets and occupied test sites to protest the planned release of recombinant plants. The protesters were greatly outnumbered by journalists, guaranteeing extensive media coverage.

The potential loss of such forums under the new streamlined approval process has not gone down well among environmentalists. Beatrix Tappeser of the Öko-Institut, an influential environmental think tank in Freiburg, declares the measures a "sad example of the demolition of civil rights" and charges that potentially dangerous experiments will now go ahead without any public scrutiny. But Secretary of Health Horst Seehofer rejects that accusation. "Show-events by professional demonstrators will be avoided in the future," he says, emphasizing that the existing high-security standards in Germany's laboratories will remain unchanged.

The new law will ease the weight of bureaucracy at one level, but researchers still have to contend with the authorities in Germany's 16 states, where most of the decision-making takes place. The state governments have widely differing levels of enthusiasm for genetic research. "If the state authorities want to extend the procedure, there are a million ways to do so," cautions Willi Siller, biological safety officer at the University of Heidelberg. But geneticists may not have to wait long for this extra hurdle to be removed: The health ministry is now drawing up new guidelines to address the problem, which will be voted on by the state assemblies in the late spring.

–Michael Simm

Michael Simm is a science writer based in Bonn.

META-ANALYSIS

A Hearty Endorsement for Aspirin

Aspirin is one of the world's most widely used drugs, but a major study being published this week suggests it is not used widely enough. If everybody known to be at high risk of vascular disease were to take half an aspirin a day, about 100,000 deaths and 200,000 nonfatal heart attacks and strokes could be avoided worldwide each year, the study indicates. "This is one of the most cost-effective drug interventions one could have in developed countries," says Oxford University epidemiologist Richard Peto, one of the coordinators of the study, a statistical overview, or meta-analysis, of clinical trials in which aspirin was used to prevent blood clots.

It has long been known that aspirin helps prevent blood clots by blocking one of the enzymes that cause platelets to aggregate, and many studies have shown that the drug can reduce the incidence of heart attacks and strokes. But until now there has been no consensus on which patients should receive such treatment and when. Some studies indicate that aspirin reduces stroke only in men; others have suggested that it does nothing for diabetics; and the rare side-effect of cerebral hemorrhage has led some researchers to argue against its use in vascular disease sufferers who have high blood pressure.

This lack of consensus has led to patchy use of antiplatelet drugs: A 1993 study, for instance, found that only 60% of acute heart attack patients in U.S. academic centers were getting such therapy. Says epidemiologist Charles Hennekens of Harvard Medical School: "We need wider indications for the use of aspirin. We need it in women, in hypertensives.... We need to get FDA [the U.S. Food and Drug Administration] to act to influence doctors."

The new meta-analysis, which covers both aspirin and more expensive antiplatelet drugs, combined the results of 300 trials involving 140,000 patients. Its recommendation: A regime of half a tablet of aspirin a day is valuable for all victims of heart attack and stroke, and other at-risk patients such as angina sufferers and recipients of coronary bypass grafts (see table). "It's not complicated," says Peto. The full analysis will be published in three consecutive issues of the *British Medical Journal* beginning on 8 January.

While the results are likely to bring consensus to the field, there are still a few areas of uncertainty. One major disagreement surrounds the study's finding that aspirin can reduce thrombosis in patients immobilized by surgery, where some of the studies were not double-blinded, and therefore could be biased. Worried about this possibility, thrombosis expert Anthonie Lensing of Amsterdam's Academic Medical Center and cardiovascular clinicians Jack Hirsch and Mike Gent of McMaster University in Hamilton, Ontario, have reanalyzed a smaller set of data. They included only results of trials that had faultless methodology and looked separately at patients in general surgery and those who had had procedures such as hip replacements, where the surgery itself can damage veins in the leg and further increase the risk of thrombosis. Their conclusion: Aspirin is beneficial only following orthopedic surgery.

Oxford cardiologist Rory Collins, another coordinator of the study, counters that splitting the data into such small chunks defeats the object of conducting a meta-analysis of many trials. And he notes that if the data for general and orthopedic surgery are considered together, there is still a significant benefit from aspirin, even if methodologically suspect trials are excluded.

Another key question, which the overview does not claim to answer, is whether generally healthy people should take aspirin to prevent vascular disease. But the answer may not be too long in coming: 40,000 U.S. female health care workers are now involved in a trial to test the effectiveness of aspirin in the primary prevention of vascular disease.

Peto stresses, however, that such future concerns should not deflect attention from the urgent need for wider use of aspirin now among people at high risk of vascular disease. Collins, Peto, and Hennekens have already urged the FDA to extend its guidelines on the use of aspirin against vascular disease. The FDA currently recommends antiplatelet therapy only for sufferers of unstable angina, as a measure to reduce secondary heart attacks after an initial coronary, and to reduce secondary strokes in men, but not women. Concludes Peto: "It's time for doctors to look at this evidence and really change their practice."

–Peter Aldhous

SUMMARY OF RESULTS OF ASPIRIN TRIALS

Proportion who suffered nonfatal stroke, nonfatal heart attack, or death during the trial

Type of patient	Length of treatment	Number of patients	Treatment group	Control group
Suspected acute heart attack	1 month	20,000	10%	14%
Previous history of heart attack	2 years	20,000	13%	17%
Previous history of stroke	3 years	10,000	18%	22%
Other vascular diseases	1 year	20,000	7%	9%