PEER REVIEW

Congress Finds Little Bias in System

Federal research agencies have long been thought to shelter "old boys' networks" and to favor insiders who know the system. Two years ago, Congress asked its investigative arm, the General Accounting Office (GAO), to look into such allegations, including the widespread belief that elite universities of the Northeast dominate scientific peer-review panels. The investigation upset some scientists, who feared the inquiry might trash peer review (*Science*, 31 July 1992, p. 609). But that isn't what happened. The GAO study is out, and peer review gets a fairly clean bill of health.

The recently released 133-page report concludes that "peer-review processes appear to be working reasonably well." After surveying hundreds of reviewers, GAO found "virtually no one" who wanted to scrap peer review as practiced by government agencies. However, GAO did find "empirical evidence of potential problems"—including gender and racial bias—and it urged the agencies to attack the underlying causes.

The study was done at the request of Senator John Glenn (D–OH), chair of the Senate Governmental Affairs Committee, in response to reports of cronyism at agencies such as the National Science Foundation (NSF). GAO found that opinions about peer review were based on a "near vacuum of empirical data," so it set out to fill the void. GAO focused on three agencies—NSF, the National Institutes of Health (NIH), and the National Endowment for the Humanities—and auditors pored over administrative files, surveyed 1370 reviewers, and analyzed a sample of 477 winners and losers in the grant-awarding process.

Although the peer-review system was generally considered to be robust, problems did turn up in several areas. In the selection of reviewers, GAO found no bias toward any one region of the country or particular type of university. But it did find that "young scholars," defined as assistant professors or other junior faculty, were underrepresented on review panels. At NSF, GAO found, "a reviewer's personal familiarity with an applicant was associated with better scores" in the review process.

"Peer-review processes appear to be working reasonably well."

—GAO Report

At all three agencies, GAO discovered that scores given to proposals "were related to gender," with women receiving lower scores than men. At NSF, minority applicants also seemed to score lower on average, though not markedly so. GAO said the data weren't adequate to explain why this pattern exists, but it conceded that the low-scoring groups may have submitted poorer quality proposals. Finally, GAO found that reviewers at all three agencies apply "unwritten or informal criteria" in judging proposals. For example, at NIH, reviewers give better scores to applications that include preliminary results, even though NIH instructions do not say it is crucial to include such data.

To remedy these flaws, GAO recommends that all three agencies include more young scholars on review panels, make more explicit the criteria for judging submissions, and ensure that reviewers stick to the written criteria. In addition, GAO wants the agencies to run "blind" tests in which the race and sex of applicants are hidden.

NSF and NIH have agreed to monitor their review processes more closely for potential bias, but they deny that review panels systematically judge women or minority applicants more harshly. Neither agency is ready to commit to running a blind test review of the kind GAO seeks. Nevertheless, for the proponents of peer review, the recent report provides a welcome endorsement.

–Eliot Marshall

HEALTH POLICY

Looking Ahead to Cigarette Regulation

On 2 August, the Drug Abuse Advisory Committee to the U.S. Food and Drug Administration (FDA) proclaimed nicotine addictive and took a big step toward bringing cigarettes under the agency's purview. Under the Federal Food, Drug, and Cosmetics Act, a product is a drug if its manufacturer intends it to have an effect on the structure or function of the body; "addiction is an indicator" of just such effects, said FDA Commissioner David Kessler. If the FDA can now prove that cigarette manufacturers intend nicotine to have this effect, the road will be clear for it to regulate cigarettes. But even though the agency has not yet overcome that hurdle, the question of the best regulatory strategy for cigarettes is already triggering hot debate.

At the meeting where the Drug Abuse Advisory Committee made its decision, one regulatory strategy garnered most of the attention—and criticism: lowering nicotine levels in cigarettes over a 10- to 15-year period to the point where cigarettes are no longer addictive. Neal Benowitz of the University of California in San Francisco and Jack Henningfield of the National Institute on Drug Abuse in Baltimore, who advocated this strategy at the meeting, maintain it will help prevent teenagers, who account for about 80% of new smokers, from becoming addicted, while weaning adult addicts off cigarettes. An admittedly rough-and-ready calculation by Benowitz and Henningfield in the 14 July issue of the *New England Journal of Medicine* suggests that each cigarette should eventually deliver less than 0.17 milligrams of nicotine, less than any cigarette now on the market. (Today's lowest yield cigarettes deliver about 0.65 milligrams of nicotine, Benowitz says.)

What Benowitz and Henningfield are proposing, said John Robinson, a psychologist at R. J. Reynolds Tobacco Co. in Winston-Salem, North Carolina, is "a huge social experiment," because it is impossible to know ahead of time whether lowering the nicotine content of cigarettes will lower the number of smokers. A lack of enthusiasm might be expected from an employee of a tobacco giant, but even smoking opponents took issue with the idea.

"I'm very skeptical. I think the empirical base is too limited" to conclude that lowering the nicotine content of cigarettes will help people to stop smoking, says nicotine addiction expert Lynn Kozlowski of Pennsylvania State University at University Park, an FDA consultant to the committee. FDA advisory committee member Max Schneider of Orange, California, who also sits on the executive committee of the National Council on Alcoholism and Drug Dependence in New York, agreed with Kozlowski, noting that there are no data indicating what level of nicotine triggers addiction in teenagers.

What's more, Kozlowski and others suggested that reducing nicotine in cigarettes could paradoxically increase health risks. Their concern is that, if nicotine levels are reduced, smokers may respond by engaging in more intensive "compensatory" smoking, in that way increasing their exposure to carbon monoxide, tar, and other toxic tobacco combustion products. And there is every reason to fear that eventuality. With the low-yield cigarettes that are already on the market, "some people alter their smoking behavior to get more nicotine," by changing the way they smoke or smoking more, says Kozlowski. Low-nicotine cigarettes could be