

fense Department, and the academy itself, the report not only redefines research spending but offers tools to help policy-makers squeeze the most out of the existing system.

Among its 13 recommendations is a separate S&T budget, drawn up by the White House under the new definition and presented to Congress. Within that budget, says the committee, the focus should be on people and projects rather than research institutions. The report praises university-based research, citing its use of peer review, its role in training the next generation of scientists, its easy dissemination of new knowledge, and its flexibility in accommodating new research directions. "The committee does not presume that academic research is always of higher quality than that conducted in industry or federal laboratories," the report says, but it "supports a general preference for academic over nonacademic institutions."

Federal laboratories, the panel says, should be downsized or closed if they no longer serve the mission of the funding agency. An independent commission, similar to the panel the military used to close unneeded military bases, "will probably be needed as a last resort" if individual agencies prove incapable of taking decisive action, the report notes.

Some of the recommendations echo earlier calls from other advisory panels, including a 1993 report by the academy's Committee on Science, Engineering, and Public Policy that says the goal of federal research should be world leadership in selected fields and world-class abilities in all areas. The new report also revives a suggestion by the 1993 panel for 5-year reviews of how U.S. efforts stand up to those of the rest of the world.

Several committee members see the efforts of the National Science and Technology Council, set up by the Clinton Administration to coordinate R&D spending among 20-odd federal agencies, as a first step toward the unified approach to science that they are recommending. "Our report represents an endorsement of the current process," says Lew Allen Jr., chair of the Charles Stark Draper Lab in Pasadena, California, and former director of NASA's Jet Propulsion Lab. The next step, says the report, is a mechanism for both Congress and the White House to monitor the fate of R&D priorities as they make their way through the legislative maze, rather than simply waiting until all spending bills have passed and tallying up the results.

"It would have been easier to ask for a 10% increase" in the research budget, says Bloom about the challenge facing the NAS panel. "But we decided to focus on the process, emphasizing the S&T budget and peer review, to help Congress make the hard choices that lie ahead."

—Jeffrey Mervis

SCIENTIFIC MISCONDUCT

Panel Urges New Approach to Inquiries

In the criminal justice system, those who investigate alleged crimes—the police—are not asked to take the case to trial also, much less decide whether the defendant is guilty or what sentence to mete out. But when some biomedical researchers funded by the federal government are accused of committing scientific misconduct, the Office of Research Integrity (ORI) does it all—investigates, adjudicates, and recommends punishment. That's too many hats to wear, says an outside panel of experts who studied how ORI operates.

Last week, in an 80-page report,* the Commission on Research Integrity recommended that ORI shed some of its enforcement responsibilities. The recommendations are intended to correct flaws in how the office has operated, notes the report, including exercising poor judgment in choosing some cases and being too secretive during investigations. The 12-member commission also concluded that research institutions should take the lead in preventing as well as rooting out misconduct, and it revised a definition of misconduct that clarifies an earlier draft (*Science*, 29 September, p. 1811).

"[ORI officials] haven't always selected or pursued their cases very well because they've gotten caught up in the chase," says one member of the commission, which was created 17 months ago after Congress asked the Department of Health and Human Services (HHS) to review its approach to alleged misconduct. The report says ORI Director Lyle Bivens "cannot be considered a disinterested party to the success of the investigative effort."

Separating adjudication and investigation at HHS—a principle that should also be applied at the institutional level—would help solve these problems, the report concludes. "It's a commonly accepted standard of law that the investigation and prosecution are separate from the judicial [outcome]," notes Kenneth Ryan, a Harvard reproductive biologist and chair of the commission.

The commission favors the approach taken by the National Science Foundation, where the inspector general performs investigations and makes recommendations to the deputy director, who then decides if the accused is guilty and sets the appropriate punishment.

* *Integrity and Misconduct in Research*; contact Henrietta Hyatt-Knorr, 301-443-3400.

Ryan says the changes could involve "some new relationship" between ORI and the department's appeals board, the next step in the adjudicatory process. The report even discusses having investigations be "assisted or directed by" the HHS inspector general, leaving ORI to concentrate on education and other functions.

Despite endorsing a role for the government, the panel says that individuals, institutions, and professional societies should "have primary responsibility" for enforcing good

research conduct. "Those who are closest to the work are best suited to make the decisions," explains commission member Kristina Gunsalus, associate vice chancellor for academic affairs at the University of Illinois. The report says institutions should expand programs for teaching researchers

about misconduct, now required only for recipients of training grants, and should handle most investigations.

The report also recommends replacing the current Public Health Service definition of research misconduct, which begins with the words "fabrication, falsification, plagiarism," with two categories explained at length—misappropriation and misrepresentation—and a new term, interference. The panel also recommends that an interagency task force be formed to develop a common research misconduct definition and that the HHS secretary come up with a regulation to protect those who first report allegations.

The report is getting a lukewarm reception from experts in the field. The recommendations "would probably make a useful difference," says Barbara Mishkin, a misconduct attorney in Washington. However, Mishkin says the commission has gone overboard in recommending that some disputes among collaborators be treated as misconduct without defining the rights of team members to data. And Paul Friedman, a radiologist at the University of California, San Diego, says a recommendation that the government make site visits to institutions "would be an excruciating waste of time."

The next step is for the panel's recommendations to be reviewed by a group of senior HHS officials. Next year the department is expected to issue a proposed rule—including a new definition—telling how it plans to handle allegations of misconduct.

—Jocelyn Kaiser

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