NATIONAL SCIENCE FOUNDATION

Multidisciplinary Office Spurs Debate

Some of the National Science Foundation's clients in traditional scientific disciplines aren't very happy about a new NSF effort to encourage interdisciplinary research. Although the new initiative hasn't even been formally announced, some physicists have written to Congress that it may drain money from basic research, possibly for projects of interest to industry. And the American Astronomical Society (AAS) is drafting a letter criticizing NSF for not discussing the idea with the scientific community first.

The object of dispute is a $30 million Office of Multidisciplinary Activities (OMA) that is taking shape in the Mathematics and Physical Sciences (MPS) directorate, the largest of NSF's eight major research programs. The office is expected to make grants to small, interdisciplinary teams of academic researchers in optical science and engineering, biotechnology, and environmental science and technology—work NSF officials say either receives insufficient support or does not fit comfortably into existing programs. "This office will be used as a stimulus to look into new areas and to get people to work together," says Tom Weber, executive officer for the MPS directorate and acting OMA director.

The driving force behind the office is Bill Harris, who heads the directorate. Harris already had a small discretionary fund to support unusual or last-minute proposals—data analysis of comet Shoemaker-Levy 9 after it plunged into Jupiter last summer, for example—but the new office will be larger and more visible. Last spring an NSF workshop on opportunities for optical science and engineering recommended an NSF-wide initiative; that led Harris to propose a mechanism to coordinate that initiative with other directorate-wide proposals.

The office will be established through a levy of $5 million or so on the budgets of the five divisions that make up MPS, and division directors will decide as a group which projects to fund. Grants are expected to be a mix of proposals from existing programs and new ideas tailored to the initiative.

Those with questions about the new office say they are still waiting to find out exactly who is eligible and how the money will be distributed. But while they wait, they wonder why NSF is starting a new program when it is struggling to fund existing activities. "This is the worst possible time in astronomy for our basic program to be downsized," says the University of California, Berkeley's, Frank Shu, AAS president, noting the stiff competition for funds among a host of facilities coming on line (*Science*, 20 January, p. 324). "And what we're most upset about is that NSF made a major decision without consulting the people most affected by it." Some researchers also question NSF's premise that multidisciplinary research needs a boost. "I'm not sure that there's something broken here that needs to be fixed," says Bruce Margon, chair of the department of astronomy at the University of Washington.

Other scientists worry that the money may go to research in areas with an obvious short-term payoff for industry. As evidence of that bent, they cite a $5 million program in the new office aimed at placing postdocs and faculty with companies—Grant Opportunities for Academic Liaison with Industry. But NSF officials deny that the office represents any shift from the agency's traditional mission. "It's all fundamental research," says Weber. "We're definitely not creating a program that is designed to produce a new widget in 5 years."

A hint of the kind of worries the program is arousing emerged at a recent hearing of the House Science Committee (*Science*, 13 January, p. 165). Representative Vernon Ehlers (R–MI), a former physics professor at Calvin College in Michigan, said he was concerned about "the diversion of $30 million in basic research money" to the new office, and he asked NSF Director Neal Lane what could be done to "reverse the trend" of shifting money from basic to applied research. Lane replied that NSF remains focused on basic research but that earlier congressional language "sent me a clear message that some [fundamental research] also has relevance to larger societal issues." Ehlers told *Science* after the hearing that several physicists had written to him expressing their unhappiness with the new office.

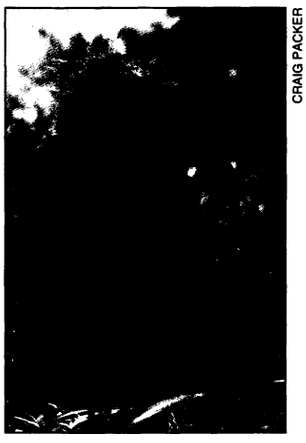
However, the office also has its defenders. Edward Knapp, president of the multidisciplinary Santa Fe Institute and until recently co-chair of the directorate's advisory committee, believes NSF should be congratulated for creating OMA. "Science has narrowed itself so thoroughly that it doesn't look at very interesting issues anymore," says Knapp, who was NSF director from 1982 to '84. Knapp also praised Harris for giving NSF "a better public relations face," noting that "NSF needs to explain to Congress the relevance of what it funds, and OMA lets it address things that are important to society."

–Jeffrey Mervis

PRIMATE GENETICS

Getting the Poop on Baboon DNA

In a modern tale of straw spun into gold, a team of researchers has extracted the secrets of nuclear DNA from a pile of baboon feces. Although the work might seem unsavory, scientists view it as the key to noninvasive primate genetics studies in the wild and have been trying—unsuccessfully—to get genes from primate dung for several years. But in the 2 February issue of *Nature*, University of Nevada animal behaviorist Julie Constable and her colleagues reveal the scoop on getting DNA from primate poop.



CRAIG PACKER

Inside information. Researchers have been able to analyze nuclear DNA from the dung of olive baboons such as this one.

"It's definitely a breakthrough, and I'm looking forward to using it," says Maryellen Ruvolo, a molecular anthropologist at Harvard University. Two years ago, her lab recovered mitochondrial DNA (mtDNA) from chimpanzee dung. MtDNA, from cellular organelles, is more common than nuclear DNA—but less informative. It is inherited only from the mother and therefore reveals nothing about paternity. Only the DNA from a cell's nucleus, which carries genetic information from both mother and father, can yield a complete family genetic history. "We've dreamed about studying male [primate] mating strategies for years," says Craig Packer, an animal behaviorist at the University of Minnesota and a co-author of the report. "But unless you have some method of actually proving paternity, you can never be certain of who the fathers are."

Feces aren't the straightforward path to nuclear DNA. The direct route is to tranquilize an animal and extract a blood sample. But scientists have been reluctant to do this to endangered species, such as chimpanzees, or forest canopy dwellers, such as gibbons, that might be harmed by a fall from a tall tree. Thus the search for DNA in animal leavings, such as hair or the easily obtainable dung.

But feces have proven to be difficult to study. One of the most serious problems was the lack of primate nuclear microsatellite primers. Primers—previously identified DNA fragments—are used like bookmarks in the polymerase chain reaction (PCR) that amplifies a strand of DNA for analysis; the primers delineate the beginning and end of the specific DNA segment to be amplified. Primers