

## NIH: The Price of Neglect

*When Bernadine Healy arrives on campus later this year, she will find an institution burdened with low morale and problems that have been allowed to fester*

**Bethesda, Maryland**—THE NOMINATION OF Bernadine Healy as director of the National Institutes of Health has stirred a murmur of optimism within NIH's laboratories and office buildings. But, according to many scientists here, it's the fatigue behind that murmur, rather than the optimism itself, that says the most about the condition of an institution that is widely regarded as the world's premier biomedical research establishment.

It's not that enthusiasm for Healy is lacking. But like long-ignored patients in some deserted hospital ward, many of NIH's more than 1500 intramural researchers seem hardly capable of expressing real exuberance any more. After a year and a half without a director, the federal facility's morale has dipped to an all-time low—"lousy," in the words of one top NIH official. Indeed, from interviews with more than two dozen NIH intramural researchers and alumni, it's clear that the prolonged absence of a permanent director has spawned or exacerbated a host of problems on campus, leaving a cumulative sense of anger and powerlessness among much of the scientific rank and file.

"We desperately need someone who can effectively speak out for our cause," says a successful, 15-year NIH veteran who, like many of the people interviewed for this story, spoke on the condition that his name not be used. Adds National Cancer Institute researcher Stuart Yuspa, who has watched NIH change since his arrival in 1972: "I've never seen a cloud hanging over this place so strongly. It doesn't hang out in the sky. It hangs out right here in the hallways."

By most measures, NIH would seem to be doing well. The intramural research budget has climbed from \$562 million in 1985 to \$915 million today, and the labs seem to be bursting with new equipment (see box). However, many researchers say, that healthy budget conceals a subtle and progressive deterioration in several important aspects of scientific support. Among the most pressing concerns voiced by NIH researchers:

- **Noncompetitive wages.** An ever widening gap between NIH pay scales and those at major universities and private research facilities has made NIH less attractive to the nation's best and brightest young researchers while spurring many senior scientists to jump ship for better paying jobs.

- **Increased politicization.** Decision-making has shifted from scientists to administrators and politicians, and entire areas of scientific investigation have been declared offlimits because of political sensitivities.

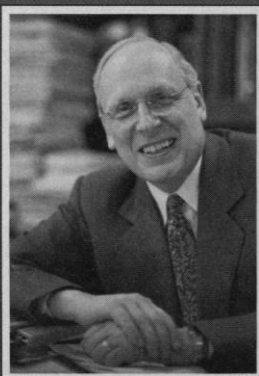
- **Accountability fever.** The trend toward what some call the "Dingellization" of science, after Representative John Dingell's zealous investigation of purported cases of scientific misconduct, has deeply angered researchers, who feel victimized and unjustly

leave to take a position at the University of Texas Southwestern Medical Center in Dallas. David Sachs, chief of NCI's immunology branch, will leave for Harvard in a few weeks. Jesse Roth, director of the division of intramural research at the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), leaves this week for Johns Hopkins University in Baltimore. And Michael Frank, chief of the laboratory of clinical investigation at the National Institute of Allergy and Infectious Diseases (NIAID), left in December to become chairman of pediatrics at Duke University.

These leading researchers are joining a distinguished list of recent NIH alumni that includes NCI's Michael Lotz, who 6 months ago went to the University of Pittsburgh School of Medicine; NCI's Mark Israel, now at the University of California at San Francisco; John Mulvihill, former director of the Interinstitute Medical Genetics Program, who left last spring for the University of Pittsburgh's graduate school of public health; and NCI's Marc Lippman, who in a highly publicized move took dozens of his co-workers—including star Edward Gelmann—to Georgetown's Lombardi Cancer Center.

To be sure, dissatisfaction with conditions at NIH cannot be blamed for every departure. And it should be noted that many of the institute's problems are not unique to NIH. A nationwide economic downturn, a decade of political conservatism, and a mania for higher standards of public accountability have touched all aspects of American life, hitting the research community particularly hard because of scientists' long-standing sense of transcendence above such mundane concerns as politics and money.

But many NIH insiders, including J. Edward Rall, director of NIH's Office of Intramural Research, feel that the number of top-flight NIH scientists leaving for greener pastures has risen somewhat in recent years. Even more worrisome, says Rall, is that the number of hotshot incoming postdocs—es-



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accused by a once trusting public.

- **Bureaucratization.** As goes government, so goes governmental science. Paperwork and red tape threaten to bury the real work of science—and the hiring of new scientists—beneath an ever growing mountain of documentation and formalities.

- **Lack of direction.** At a time when biomedical science has in many respects entered its most exciting era ever, some say that the NIH intramural program lacks the sense of mission that once characterized the institution.

As an ominous indicator of the cumulative sense of discontent, many researchers point to the recent exodus of an extraordinary number of top NIH scientists. Just last week John Minna, chief of the NCI-Navy medical oncology branch, announced he will soon

pecially M.D.'s—is on the decline.

Says Jeffrey Schlom, chief of NCI's laboratory of tumor immunology and biology, the real appeal of NIH is that "you're surrounded by a critical mass of very interesting people." If NIH continues to lose its best minds to university and corporate giants while failing to attract brilliant young investigators, he warns, that critical mass could disappear. And without its intellectual gravitational core, hordes of others might quickly flee for more interesting turf. "When it falls," Schlom says of NIH and its magic, "the whole thing will fall like a house of cards."

Not every institute or division at NIH shares the same problems—indeed, some are experiencing relatively heady times, thanks in part to the AIDS funding bonanza. In the more contented NIH laboratories, self-described "happy campers" shudder at the prospect of applying for grants and giving up research time to fulfill teaching duties at a university post. They note that scientific momentum and morale at NIH has a history of ups and downs. And overall, they say—especially when it comes to doing clinical research—there's just no place like NIH. "You cannot carry out clinical research at such a high level anywhere else in the world," maintains Ron Crystal, chief of the pulmonary branch of the National Heart, Lung, and Blood Institute's Division of Intramural Research. Whatever the problems, he says, "This place is a gem for the United States."

Still, in the view of many scientists, the gem has lost much of its luster. "NIH has always changed, of course," says Maxine Singer, NIH scientist emeritus and president of the Carnegie Institution of Washington, D.C. "Yet things were always somehow normal," she says. "Not anymore. Life is not normal at NIH."

#### The pay differential

"The major morale problem I see is one of salary," says Joseph Bolen, an NCI investigator who submitted his resignation this

month. "I'm a Ph.D., been at NIH for 10 years, and we still rent a house. And if I stayed here, we'd never be able to buy a house."

Bolen says he was happy working at NIH, loyal to the institution that had provided him with relatively robust facilities to pursue his interest in lymphocyte signal transduction. "But the salaries are so pathetic here. Finally, you reach the point where you say, 'This is ridiculous.'"

Last spring, when Bolen took a peek at what the outside world had to offer, he found he could earn a salary about three times what he was earning at NIH. "Frankly, I was shocked," he says. By winter, the writing was on the wall: "You get to the point where you can't say no." In June, Bolen moves to Princeton, New Jersey, to continue his signal transduction work for the Bristol-Myers Squibb Pharmaceutical Research Institute.

Roth, whose position at the diabetes institute provided a good vantage point, notes that Bolen's story is typical of a growing number of NIH's finest. "At a time when we desperately need good people because fewer and fewer are entering the field, we have an increasing mortality rate at the top as people go on to better paying jobs in business and industry."

Scientists vary in their assessment of the problem's urgency. But even NIAID director Anthony Fauci, generally upbeat about institutional health and morale at NIH, expresses some concern. "We still have a lot of superstars, but the temptation for them to leave becomes greater and greater every year," he says. "The pay differential is ex-

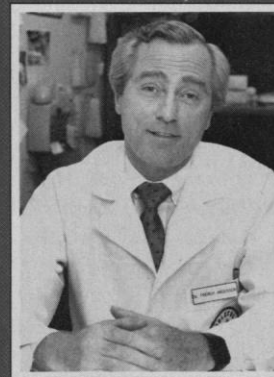
traordinary."

Fauci and others note that the recently established Senior Biomedical Research Service, which will provide about 200 top-notch NIH researchers with salaries up to \$138,900, should help stanch the hemorrhage of talent from the top. But that program passes over the bulk of NIH's hardest working loyalists, Bolen contends. "Everyone who is going to be chosen for this is already a lab chief or an administrator. So all this hubbub will do nothing for people like me," he says.

Moreover, Roth notes, NIH salaries take

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—W. FRENCH ANDERSON



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a talent toll at the bottom as well as the top. "We've allowed starting wages of newly hired scientists to dip too low," he says, noting that extremely talented postdocs arriving at NIH now receive about \$25,000 per year. "These are excellent students, 5 years out of their bachelors' programs, while kids just out of college are getting paid that at places like Pillsbury," Roth says. "We just haven't kept up. The system is not a good steward of its talent."

Interviews with deans and other officials at several of the nation's universities and medical schools indicate that although some pay postdocs roughly the same starting salaries now accorded NIH postdocs—

## Networking the Labs: Doing It Right

Despite downbeat assessments of NIH morale, the agency can respond rapidly when new resources are clearly needed. The recent installation of advanced computing facilities for molecular biologists is a case in point. Through much of the 1980s, computer support for NIH scientists lagged, says David Lipman, director of the National Library of Medicine's National Center for Biotechnology Information and a 10-year veteran of NIH. "The campus didn't get networked while prestigious universities did. There was no E-mail, no access to the big machines, and there wasn't support for local work stations. So until about 1987 molecular biologists got somewhat disaffected because they weren't getting what they wanted."

But things changed after Lipman and others made recommendations to the NIH administration in 1988. "They got the message in a big way," he says. Cables were laid. Work stations came on line. Top-of-the-line molecular biology programs were installed. "Now the average user on campus has as good, or better, support as people on major university campuses."

The NIH network remains slower than some would like, Lipman says, and plans to speed it up have met with some delays. "But the fact that they created a center like this in response to our need for molecular biology computer tools says a lot. There was nothing. Now there's all kinds of facilities and top-flight people. It happened amazingly quickly." ■ R.W.

\$18,600 per year for the average postdoc—they tend to pay much bigger increases in subsequent years than NIH's standard \$1,500 per year. Some schools, moreover, pay substantially more—up into the \$30,000-plus range—right from the start. And postdocs going into corporate jobs generally do even better.

The result has been a noticeable decline in the number and quality of new NIH scientists, says Rall. "My big concern is that we are not getting as many brilliant young scientists, both M.D.'s and Ph.D.'s, as we used to," he says. Rall finds M.D.'s in particular shunning the civil service sector nowadays, largely because of financial concerns. "M.D.'s are, on average, hideously in debt," he says. "So they can hardly consider a postdoc experience that won't help them pay off their loans."

Many NIH investigators express additional frustration about a recent congressional requirement precluding federal employees, including NIH scientists, from receiving honoraria for talks or written presentations—even on topics unrelated to their work. Honoraria constitute a "small but significant" supplementary income for many scientists, says Stuart Aaronson, chief of NCI's Laboratory of Cellular and Molecular Biology. Not being allowed to get the \$100 to \$200 that can accompany some talks, when privately funded

know it can be, 'Dr. X, now we're going to tear you apart for a year or two, just because a congressman wrote a letter.' "

Fears of an evolutionary trend from small science to big science to Big Brother science blossomed with last May's circulation of a two-paragraph memo to all NIH employees from acting director William Raub.

"All Federal employees have a responsibility to report any situation involving possible conflict of interest or any violation of the standards of conduct by co-workers to proper authorities," the memo declared. "As NIH employees you should report such matters either to your supervisor or one of the appropriate investigative offices." Noting that anonymous calls were welcome, the memo provided phone numbers for the NIH and Health and Human Services offices in charge of investigating such allegations.

The tone of that memo stunned many investigators who received the missive. "I could with one anonymous phone call put any scientist out of business for a year, and things shouldn't be that way," says an NCI investigator. "Nobody wants to tolerate scientific fraud. But this, incredibly, is making bench scientists deal with questions like 'What are the rights of the accused?'"

Researchers express particular dismay about the extended and ongoing NIH investigation of Gallo and the apparent lack of dexterity with which NIH has handled the affair. "You don't have to like him, but where does it stop?" says one observer of the Gallo debacle. "He's been neutralized now for a year and a half."

Of course, accountability fever is not limited to NIH; as science becomes more pricey, so grows the govern-

ment's interest in the fate of its research dollars, says Fitzhugh Mullan, director of the Public Health Service's Bureau of Health Professions. "Science and medicine have gotten outrageously expensive and there's a growing expectation that the process of scientific discovery be more accountable and more pragmatic."

Nevertheless, some scientists say that the fear of Dingell has already darkened the spirit in which science is done. "People are absolutely terrified of this Dingell business. They're afraid to make a mistake," one researcher told *Science*. "You do your experiments, you try to do it right, but very often these things are hard to reproduce when you're on the cutting edge." Normally, he

says, things work themselves out in the literature. "But now it's fraud. It's an awful time to do science. You can't imagine the pressure for everything to be perfect."

Adds one intramural veteran, "What I'm afraid of is that young people won't want to go into a field where there is almost a neo-McCarthy atmosphere."

### The politics of abortion

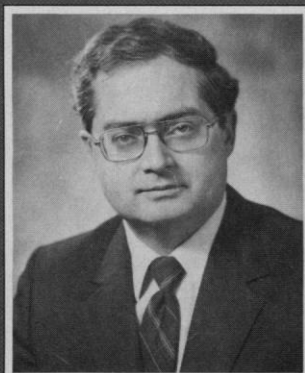
Scientific misconduct may have poisoned the atmosphere in which scientists conduct their work, but another issue—the politics of abortion—has entirely shut off NIH scientists from some areas of research. These areas include work on in vitro fertilization and experiments involving transplants of human fetal tissue—research that scientists at other institutions can perform with private funds.

The issue is not an unfamiliar one to NIH, notes Gary Hodgen, who in 1984 left as chief of NIH's pregnancy research branch out of frustration over federal restrictions on his work. "In the past two decades, NIH has increasingly been influenced by political agendas instead of being motivated by a search for knowledge and a desire to help humanity," says Hodgen, now at the Eastern Virginia Medical School in Norfolk.

"You cannot conduct an aggressive career in science and medicine at NIH because so many interesting areas are restricted," he says. "You can't study pre-embryos, you can't study fetal tissues to study infertility. And anything having to do with abortifacients is absolutely taboo. What we're seeing is that if you work in this sphere you have to accept a truncated professional agenda or you have to leave the system to include these areas."

Hodgen is not the only NIH scientist with an interest in reproductive medicine who found it necessary to leave Bethesda. Back in 1983, Joseph Schulman left his position as head of the National Institute of Child Health and Human Development's section on human biochemical genetics and head of the interinstitute medical genetics program to become the director of the Genetics & IVF Institute in Fairfax, Virginia. Schulman says he was just the first of many to seek a less restrictive environment for his research, pointing in particular to Lynn Loriaux, who last August left for the University of Oregon Medical Center in Portland to pursue, among other things, studies of the French abortifacient RU486, which he was precluded from studying at NIH. "Virtually every reproductive scientist has left [NICHD] by now," Schulman says. "NICHD is a totally different organization now. The field has been decimated."

"It's an old story but it's grown larger in its proportions in this era when fetal diagnosis and therapy are begging, just begging, to be studied," says John C. Fletcher, the Uni-



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scientists face no such restrictions, "makes you feel like a second-class citizen. Why make us feel like criminals every time we want to do something outside?"

### The Dingellization of NIH

Next to money, perhaps no topic stirs such passion among NIH scientists as efforts to root out scientific misconduct. So intrusive and depleting have been the federal investigations of allegations leveled against researchers such as David Baltimore and NCI virologist Robert Gallo that the entire NIH research community now seems galvanized into a defensive and almost paranoid posture.

"But for the grace of God it could happen to any one of us," says one NCI researcher with 18 years on campus. "Next thing you

versity of Virginia ethicist who founded NIH's bioethics program in 1977 and remained as its chief for the next 10 years. "Many people's research careers have dissolved under this suppressive environment," he says. And in the process, "NIH's growth and potential have been stunted seriously, in my view."

Faced with the de facto federal ban on research involving human fetal tissue transplants, NIH researchers have been forced to explore alternate paths—sometimes producing unexpected discoveries that might not otherwise have emerged, says Irwin Kopin, the NIAID biologist whose initial request to perform fetal tissue transplants spurred the ban on federal funding of such work. "It changed our focus from cell replacement to growth factors that might get a patient's own cells to grow and regenerate, which may bypass the fetal cell issue altogether," Kopin says. Still, Kopin confesses he's sometimes frustrated by the inability to perform parallel studies with fetal cells for purposes of scientific comparison.

"We'll cross the stream," Kopin says, "but we'll have to step on different rocks to get there. And we hope those rocks are there, or we're going to fall flat on our faces." Others feel that fetal phobia has already left NIH face down in the mud, an innocent victim of political bullying. "NIH is selecting for mediocrity," Loriaux says.

Ironically, NIH remains in the forefront of other research areas arguably as controversial as fetal cell transplants. Gene therapy, for example, stands out as a shining example of cutting-edge, NIH-sponsored clinical research unparalleled anywhere else in the world.

"I'm not sure it could have been done anywhere else but at NIH," says W. French Anderson, the heart institute clinician who recently began the first federally approved gene therapy trials in children suffering from a life-threatening immune deficiency. "Yes, you have problems with government paperwork, the budget doesn't pass and funds get frozen, there's this ceiling and that ceiling, and decisions get postponed." But anywhere other than NIH, he says, "I would never have been funded to do work like this."

### The paperwork mountain

For many federal researchers, superstar projects like gene therapy provide impressive but frustrating examples of how good things could be—indeed ought to be—at NIH.

Unfortunately, they say, where NIH was once renowned for its nurturing support of free-thinking, even risky, frontier spirit science, it now lies half-smothered under a bureaucratic blanket, which adds a final blow of lethargy to an institution already burdened with limited funds and political intrusions.

When it comes to personnel decisions, for example, "People take years, literally years, to make appointments," Singer says. "There's no way to get the first-rate people when you tell them you won't know for 2 years." Singer recalls it once took her 3 years to get through "the layers of review" required to get a promotion for a technician in her lab.

Others complain about the reams of documentation required to perform even the most basic research on the campus. "The paperwork increases at every level have gotten phenomenal," says Roeth of NIDDK. "The closer you get to meaningful research, the greater the number of committees need to approve it. The justifications, the protocol details, it's just too much."

Bureaucratization of the procurement process is "a big problem," says Anthony Furano, chief of the genomic structure and function section of the NIDDK's Laboratory of Biochemical Pharmacology. "There's all kinds of hoops we have to jump through. Now the lab chief has to sign every little receipt that comes through the lab store."

Moreover, he says, many of the motivations behind NIH paperwork remain unserved by purchasing policy. "They're always trying to maximize competitiveness. But in doing so the purchasing process can become complicated, inefficient, and more expensive than need be," Furano says. "For example, unless we provide written justification, we must purchase some items from what has been defined as a 'small' company regardless of whether that small company is actually the small U.S. subsidiary of a large European company."

Crystal, of the heart institute, notes that much of NIH's purchasing labyrinth reflects congressional restrictions on how NIH spends its money. But there are two sides to that coin, says Florence Haseltine, director of the child health institute's Center for Population Research. "It's not so bad that NIH has to answer to Congress. After all, we demanded \$8 billion from them, and at those levels we should expect some pressure to account for how it's spent." Still, she adds, "The fact that you've got government money doesn't mean that the government owns you."

### The challenge confronting Healy

All told, scientists say, the situation cries out for a Commander-in-Chief. And encouragingly, if Healy meets with Senate

approval, she may become the first NIH director granted the power that's really needed to rally the behemoth agency. That's because Healy comes to the post with freshly enhanced ranking never granted to previous directors.

Her new job description, hammered out in part by a blue-ribbon committee established last year by Assistant Secretary for Health James O. Mason, endows her with unprecedented autonomy from NIH's bosses in the Department of Health and Human Services and access to substantial discretionary funds.

Still, scientists say Healy will need more

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Bill Branson/NCI

than increased political power to provide a renewed sense of mission to the ennui-burdened institutes. That job will require macromolar concentrations of insight and perhaps a new vision of the essential purpose behind NIH.

"We haven't had a director in the past 10 to 15 years who has had any idea about what the whole intramural program is all about," says one frustrated researcher. "Is it a group of labs that are adjuncts to a particular medical problem? Is it a free-standing, broad-ranging research institute? What are the goals of the labs as teaching facilities?"

The enterprise itself isn't well defined, he says. "And the particular role of each component isn't well defined either. So the place ends up being run by a bunch of administrators that have their own goals, and scientists just get in their way."

While that assessment may be unduly harsh, even the happiest investigators express some concern about the near future if current trends continue.

"The worry is that we are in the most wonderful time now in biology—the problems are finally solvable," Aaronson says. "But all the young people, when they see what's involved, are going to become lawyers. It's depressing in this period of scientific plenty." ■ RICK WEISS

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