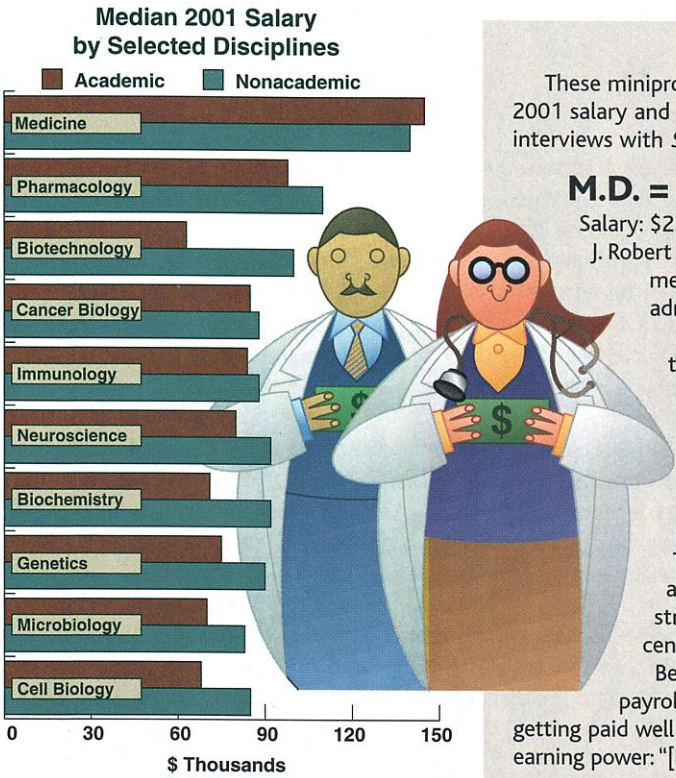


Soothing medicine. The top-drawing field in this survey is academic medicine—with a median salary of $145,000—which helps explain why a lot of people wish they'd gotten an M.D. And that's the only field where the salaries aren't better outside academia. **(Figure 9)**

job change, 79% said intellectual challenge is "highly important" (Figure 12). Autonomy on the job comes next at 70%. Only 53%, in contrast, make salary a top priority, and only 32% put a premium on prestige. Nonetheless, worldly recognition is more important to academics than to nonacademics—especially those academics working at doctoral-level institutions and medical schools.

Life scientists in academia spend half their time conducting research; the proportion is slightly lower in nonacademic settings (Figure 13). In fact, respondents say that one of the benefits of being low on the totem pole—the nontenured and those not on the tenure track—is the chance to spend more time in the lab. In contrast, more senior academics spend increasing amounts of time on administrative tasks as they rise through the ranks. Research is basically limited to "writing grant proposals and papers, while my students and postdocs do the fun stuff," says cell biologist Sidney Pierce, 56, of the University of South Florida, Tampa. "Of course I would love to do nothing but research. But somebody has to run the show."

Despite those complaints, scientists in medicine, ecology, and environmental sciences are the only ones who spend less than half their time on research. Physicians, who spend over two-thirds of their time on tasks

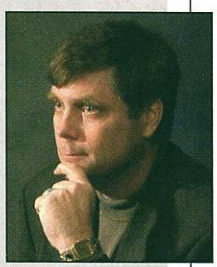
ILLUSTRATION: TERRY E. SMITH

These miniprofiles personify important trends reported by respondents in the AAAS 2001 salary and employment survey. The information in the profiles was gleaned from interviews with *Science* and not from survey responses, which remain confidential.

M.D. = More Dollars

$235K

Salary: $235,000



J. Robert Beck has parlayed an undergraduate math major and a medical degree into a remunerative career that combines administration and research.

After 9 years at Baylor College of Medicine in Houston, Beck started last month as vice president and chief information officer at Fox Chase Cancer Center in Philadelphia. Beck calls himself a "decision scientist" who does research on medical decision-making, disease modeling, and bioinformatics. He started out after medical school as a junior faculty member doing research, teaching, and clinical work. Then, in 1989, he launched into information technology administration at a time when "not that many people with IT and management strengths were working in medical schools." Now, he says, "every health center has people who do this."

Beck says his new job includes oversight of everything from phones and payrolls to the organization of bioinformatics and genomics programs. Despite getting paid well for his labors, he says that working for a nonprofit puts a ceiling on his earning power: "[My salary] is nothing like what this job pays in the private sector."

Happy With His Lot

$110K

Salary (includes grants): $110,000

At 52, Stuart Firestein is a happy man. He typifies a large portion of the respondents to our survey—a middle-aged, tenured male faculty member who likes his job. But he's unusual in one respect: He didn't earn his doctorate until the age of 40, after a career in the theater doing directing and lighting design.

Today Firestein, an associate professor at Columbia University, limits his designs to his lab, where since 1993 he's explored the molecular physiology of olfaction in rats and mice. "I've been very lucky. It was just the right time to get into my field," says Firestein.

Although the university expects him to focus on teaching in exchange for the 65% share of his time that it supports, he actually teaches only one undergraduate class and one graduate seminar a year. The rest of his pedagogy comes as a mentor in his lab, where he spends an estimated 80% of his time. "There's sort of a macho thing among people who run labs: They have to say how much they dislike teaching," says Firestein. But he and his colleagues take teaching "very seriously," he adds.

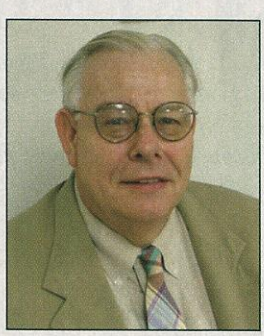
He does carry a larger administrative burden than he would like—"I'm not very good at saying no." But, he adds wryly, "if you don't do them, an administrator will."

Administrating Can Be Fun

$106K

Salary: $106,799

Finnie A. Murray, 58, spent 25 years as a biology professor at Ohio State and Ohio universities, studying early fetal development. Then he fell into administration, "more or less by accident," and found that he liked it. Now he's dean of arts and sciences at Texas A&M University, Commerce, a part of the Texas A&M university system.

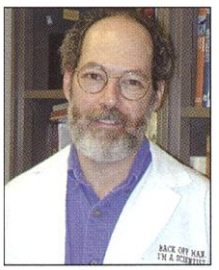


Murray reluctantly gave up research in reproductive physiology when he became dean 15 months ago. He teaches one course a semester—and spends the rest of his time working to solve other people's problems. "I enjoy the challenge. ... I found it was as stimulating as being in the lab. It's rewarding to be able to do something to make other people successful—to take an impossible situation and try to make something possible out of it."

Starved for Research

$50K

Salary: About $50,000



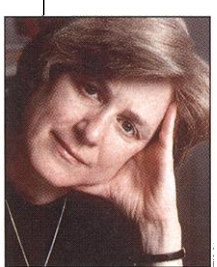
Professors at non–doctoral granting schools often find to their sorrow that teaching duties tend to crowd out research. That's what vertebrate behavioral ecologist William Rogers discovered after landing a job at Winthrop University in Rock Hill, South Carolina, in 1989.

"I was sort of an academic sharecropper for a while," says Rogers, 51, who earned a Ph.D. in zoology from the University of California, Berkeley, in 1985. He is now a tenured professor at Winthrop with a heavy teaching load—more than 12 and sometimes as many as 18 "contact hours" per semester. And "a lot of service is expected here," he adds. Rogers says that faculty members are expected to be productive in research, but that he's lucky to carve out 5% of his time for his research, which is funded by various government and private sources. And some of that is spent "desperately trying to keep up with journals."

More importantly, his teaching duties leave him with little opportunity or time for interaction with colleagues. "Day by day, I have just quietly lost a sense of connection with the bigger scientific community out there," he says.

Forever Young

Salary: Satisfying



HARLEY SOLTES/*SEATTLE TIMES*

Geneticist Mary-Claire King, 55, wants her career to last forever. The first researcher to find a gene causing an inherited form of breast cancer, King runs a lab of about 20 researchers at the University of Washington, Seattle. And she has no plans to slow down. "When you look at opportunities available now in genetics, it's just irresistible to keep doing science," she says.

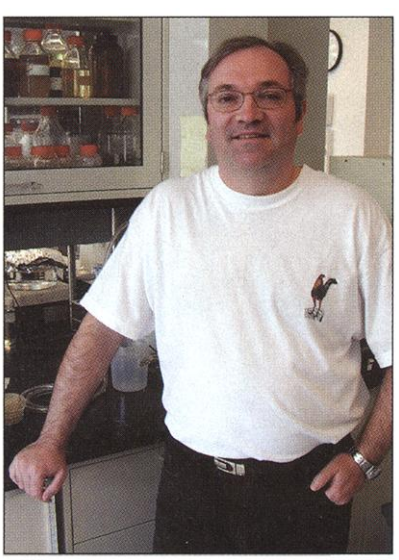
She's also satisfied with her financial situation. She received a 30% pay hike as a full professor at the University of California, Berkeley, in the early 1990s after a university statistician discovered that females at her level were making substantially less than the lowest paid male of that rank. Moving to Washington in 1995, she says, "I am happy with my [current] salary," which she prefers not to disclose.

Instead of stepping aside to make room for younger scientists, she's come up with another way to nurture new ideas. "I've already started to include young investigators whose interests I share and who are highly autonomous," she says. She's also rethinking her response in the AAAS survey that she planned to work until she is 80: "After talking with some 80-year-old friends, I realize that may be a little young."

Biotech Veteran

$85K–$105K

Salary: Between $85,000 and $105,000



Tony Day, 42, is head of structural biology at Genencor's R&D center in Palo Alto, California, and a veteran in the fast-moving biotech industry. He's been at Genencor, founded in 1982 as a collaboration between Genentech and Corning, for 8 years. "This company is unusual: It has one of the lowest turnover rates in the industry, due largely to the flexible and collegial work environment," he says of the company's 1100 employees.

The British-born Day headed for the New World in 1993 after completing his postdoc in enzymology at Cambridge University. Inadequate funding made for "very poor" opportunities at all but the most elite U.K. institutions, he says, whereas the U.S. biotech industry offered the promise of well-equipped labs and good-paying jobs. Day says he has done some business development and has acquired a taste for it. "At a certain level, it's as much management as research," says Day. "To get back to the lab full-time, I'd have to take a step downwards both in salary and responsibility."

other than research, teaching, or administration—presumably patient care—are most eager to increase research time. Researchers in the medical specialties of cancer biology, neurobiology, virology, and immunology report the highest percentage of time in the lab.

The opportunity to teach is also a strong component of job satisfaction. But the pattern is complex. For almost half of respondents, the median amount of time currently spent with students—27% for academics—seemed about right. But a need to find the right balance is also important. People at medical schools who do little teaching want to do more, and people at colleges and universities who teach a lot want to do less. Instructional burdens are particularly onerous at non–Ph.D.-granting schools. "I had this vision of a college professor as one who could finally have the time to sit back in his chair, feet on the desk, and keep up on the science," says Feirer of St. Norbert College, who spent the early part of his career as an industry scientist. "Instead, I find now that I'm further behind than I've ever been."

The one thing few people want is more administrative duties. Even senior executives in government and private industry say they would like to reduce the amount of time spent on administration.

Postdoc update

Science talked with a handful of postdocs earning from $27,000 to $36,000. With so little disposable income, they are understandably concerned about whether their employer pays for health insurance and other benefits. But as one postdoc points out, "there are a lot of disparities [among institutions] in the rules and guidelines for postdocs."

Of the 292 postdocs who responded to the survey, 76% work in an academic institution, and 46% hope to climb aboard the tenure track. Although one postdoc says she is open to moving to a more applied focus in an industry job, she adds that "I have to like what I work on."

The data also suggest that the warnings several years ago of an "endless" postdoc may not be materializing. Although some 42% of current postdocs (and 37% of all who have done at least one postdoc) say they have held two or more such positions, that percentage is no higher than what biochemists reported in the 1980s (*Science*, 3 September 1999, p. 1533).

Looking both ways

The survey tried not only to capture what people have done with their ca-

Life at a Medical Center $150–$200K

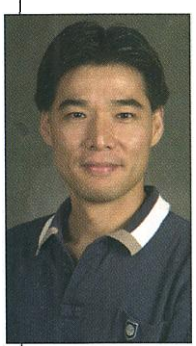
Salary: $150,000 to $200,000

As an administrator in a California academic medical center, Linda Cork is on the cusp of the financial and operational upheavals caused by U.S. health care reforms. It's a tough job, she admits.

Cork, a veterinary pathologist, is chair of the comparative medicine department and runs the animal care program at Stanford University in Palo Alto. Research is mostly a memory. Instead, she and her colleagues "are constantly facing changes in the regulatory environment"—everything from the shape of mouse cages to the training of the graduate students who work with them. They must also be "expert on all areas of personnel and budget." In addition, Cork is scrambling to house an "explosion" in the mouse population as genetic technology multiplies the number of models used for research.

The 64-year-old Cork says that she could have remained a full-time researcher, studying degenerative diseases of the nervous system in mice. But "comparative medicine [which uses animal models to study human conditions] is not that big a field, and I felt that it was time to provide opportunities for junior people."

Dedicated Postdoc $36K



SUNY

Salary: $36,500

Biochemist Xiao-Dong Gao was one of the first students given the chance to study abroad when China opened its doors to the West in 1982. He spent 15 years in Japan, getting his Ph.D. at the University of Tokyo before heading to the United States. Now, at 36, Gao is in his fourth year of a postdoc at the State University of New York (SUNY), Stony Brook, studying the biosynthesis of cell surface molecules in yeast and fungi that cause human fungal diseases. "I love science. I want to have my own lab and get grants and do research," says Gao.

With 2 years left in his postdoc, he's not sure where that might be, however. His wife, who is Japanese, is working at SUNY as part of her Ph.D. in biochemistry from Tsukuba University. "I can go back to Japan if I want," Gao says, but "for a woman scientist it is very, very hard to get a job in Japan."

Gao says he'd return home if China offered him enough money to carry out a first-class research program. But the United States would be his first choice. "If I can do science here, of course I want to stay. This is the best country to do science," he says.

High-Risk Start-Up $100K

Salary: $100,000

When Rajan Kumar decided to set up a company to develop patented microarray systems, the stock market was still booming. But by the time the company, Genome Data Systems in Hamilton, New Jersey, opened for business early this year, the financial climate had soured. As a result, Kumar has only three employees on the payroll. "We didn't start at a good time," he admits.

The original idea was to attract venture capital and expand very rapidly. But as the market collapsed, he says, "we changed our strategy and decided to pursue technology development with federal money." The company now has two grants, from the departments of Energy and Defense. One is for developing small instruments requiring less than a microliter of sample solution that can be used in testing possible drugs. The other is for microarrays of proteins for use in proteomics research. Now, he says, "we'll be around for the next 18 months at least."

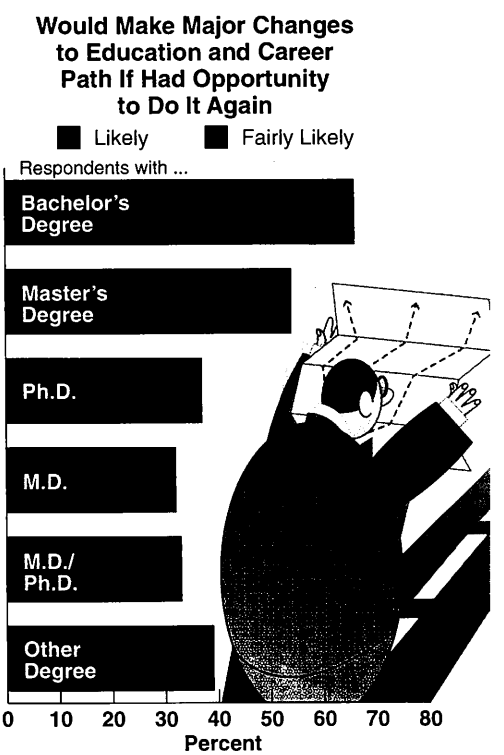
Kumar, 37, got his Ph.D. in molecular biology and worked for almost 5 years in the private sector. He started his own company because "I wanted to work in a situation where I was closer to developing a product." Kumar's company may get an unexpected boost from the newly launched U.S. war on terrorism: One use for its technology is as an assay for potential toxins in bioweapons.

—CONSTANCE HOLDEN

husband's job, says that credential would have made her much more employable; she can't find a job despite a varied career in research and teaching. Many respondents also felt they would have benefited from a business degree (9%). Degrees in law, computer programming, or engineering were also seen as desirable.

Reflecting their unsettled states, people just beginning their careers are more likely to say they would have chosen differently. Women were more likely than men to consider a major change. Several people expressed regret that they had not gotten started on their career path sooner; others wished they had recognized the importance of being affiliated with a high-prestige school or lab.

Again, differences in priorities may result in different career choices by men and women. Although life scientists overall value knowledge and discovery over other factors, males were more likely to care about making money, whereas women focused more on lifestyle issues: geographic location; opportunities for collegial exchange; working hours and conditions, in-



Starting over. About 37% of all respondents said they would make major changes in their education and career paths if they had it to do over. Of the 6% who hold only bachelor's or master's degrees, the majority now wish they had pursued further education. The people with M.D.s seem most content with their choices, but even among these, one-third wish they'd done something different. **(Figure 14)**

ILLUSTRATION: TERRY E. SMITH