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# Alliance *viewpoint*

*The Scientific Enterprise:*

## Consider the Life Science Work Environment In Academia, Government and Industry

This past spring, the journal *The Scientist* ran an article on the work environment in academia and industry. Based on a reader survey, the article gave advice to life science researchers considering a move from academia to industry.

In 1986, I earned a Ph.D. at the University of California—a dual degree in pharmacology from UCLA and in biochemistry from the Riverside campus. I was the first African American Ph.D. graduate in either field at either campus. I did a postdoctoral fellowship at Merck, Inc., and am now at the National Human Genome Research Institute, National Institutes of Health (NIH). Based on my own experiences with life science in all three environments, I felt that further consideration of the scientific work environment, including the government, especially as it is found at the NIH, might give underrepresented minorities a more complete picture.

*The Scientist* survey, which did not mention the government work environment, cited industry as the place to work for financial rewards and career development, with academia as the place for creative freedom tempered by the pressure to publish. I would like to suggest government as the optimum work environment for resources—in terms of both intellectual diversity and infrastructure.

There is a lot of talk about the financial rewards of industry. While it is true that some scientists make a great deal of money in industry, it depends on when and where they entered. The industry/money buzz focuses on scientists who entered on the high end at senior-level positions. Those scientists, for the most part, came from academe, and they do receive significant financial increases over academe or government.

shareholders to whom they have to answer and for whom they must make a profit. So an industry scientist, someone at the postdoctoral level who would be using his or her creative expertise to drive a project, find solutions and develop new technology, can be doing great science—and I believe that all companies want to do great science. However, that science has to be consistent with the mission of the company. Its successful results must increase the bottom line. Within those confines, the industry scientist has a certain level of creative freedom.

There are creative freedom issues in academe as well, but basically, creative freedom is one of the central tenets of the academic world. In fact, the whole tenure system is built upon it. Tenure allows professors to exercise creative freedom without fear of losing their job because their research took them in a direction that the university disagreed with and wanted to censure. Tenure offers a sense of security that allows researchers to get into some controversial areas.

The National Institutes of Health is the part of the Public Health Service of the Department of Health and Human Services that conducts biomedical research. We answer to the taxpayers; they are our shareholders. We are here to find the answers to the public's health questions. The financial rewards in the government are minimal

Life & Related Scientists Employment by Ethnicity—1999\*

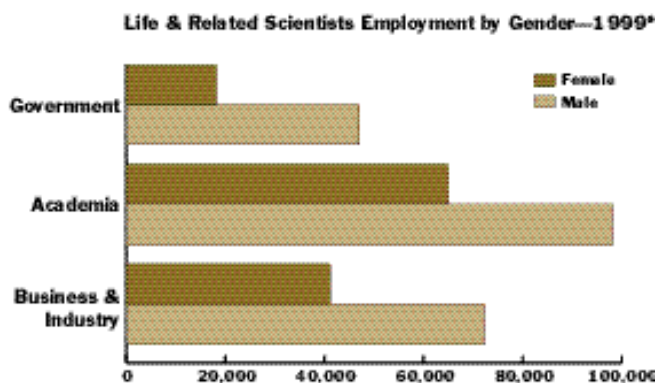


# Comparing Academic, Government and Industry Work Environments

the science—because they believe in what they are doing and having an opportunity to do it. They are doing what they love.

Of course, one earns enough money to have a very decent lifestyle, and there are other compensations at the NIH. One of the true joys a scientist can experience comes from working in a state-of-the-art laboratory. With our resources, the NIH is able to provide the best research facilities in the world—bar none. We receive or create reagents and equipment that are completely unavailable to others. That is just infrastructure; there is also the availability of immense intellectual resources. Our collection of scientists come from all over the world and are the best the world has to offer.

We have as much creative freedom as academe. In fact, the NIH system mirrors academe. We have the same reviews and evaluations—done by leaders in their respective areas from academe. We also have a tenure-track system that is, for



the most part, almost identical to the academic system. We even have the same pressure to publish; if you do not publish here, you are not going to get tenure.

However, I do not believe that people become scientists for the money or shy away from science because of the pressure to publish. Science is what really drives scientists. Most researchers do not choose a career in the life sciences based primarily on the size of the paycheck they think they can have at the end of the month—although anyone who has undergone the extensive training and years of schooling it takes to earn a doctorate rightly expects to make a good living. Industry, as in the case of *The Scientist's* survey, is most often identified as the place to make money, and many underrepresented minorities, who often begin at a lower financial level than their peers, are anxious to reap financial rewards as soon as possible. I know it was my first instinct, but it is very shortsighted.

Looking back now through the lens of experience, I would advise new scientists to develop their careers by focusing first on the quality of their work, and the money will follow. Developing a standing in your field is crucial. You do this through publishing, whether you are in academe, in

government or now, in many cases, in industry. Scientists were once afraid that if they went into industry they would be stuck on secret, proprietary projects and never be heard from again. That is the industry of old. Merck used the record of its scientists' peer-reviewed publications for recruitment and promotion. Regardless of the work environment, publishing is important, period. It is an indication of the quality of your science; it is the meter by which you are judged as a scientist.

Networking is at least as important as publication. Science is built on alliances and interactions with other scientists. You need each other to be able to publish. Successful scientists network very well; they know everyone and they interact. Your colleagues are the ones who help you with experiments—you bounce ideas off of them; they provide resources and reagents you may need, and they co-author papers with you. As a minority, networking is more difficult, but you have to take the initiative and push yourself to be an active part of the scientific community. This starts with your mentor because that is the person who introduces you to the community as his or her protégé. You should pick your lab and your mentor very carefully. Look for good science and someone who knows what it takes to be a good mentor—someone with whom you can establish a relationship and who you think will be willing to be your future ambassador.

Finally, you have to establish the fact that you are determined enough to persevere. You cannot let yourself become discouraged by the prejudice that still exists in industry, academic and government work environments. Anyone who gets accepted into a research program has the proper credentials for success. However, you cannot measure the toughness it will take to succeed until you are called on to show it. So, develop your career, network, publish, persevere and be patient. If you do, the recognition, fulfillment and financial rewards will come.

*Our guest editorialist, Dr. Ron King, is the associate scientific director and the director of the Technology Transfer Office of the National Human Genome Research Institute, National Institutes of Health.*

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