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A Study on the Status of Women Faculty in Science at MIT

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Nancy Hopkins is the Amgen professor of molecular biology at the Massachusetts Institute of Technology (MIT). After receiving her Ph.D. from Harvard University in 1971, she was a postdoctoral fellow of James D. Watson and Robert Pollack at the Cold Spring Harbor Laboratory. With Watson and three others, she coauthored the fourth edition of the textbook, *The Molecular Biology of the Gene*. She was appointed chair of the first Committee on Women Faculty in the School of Science at MIT in 1995, and in 2000 she was appointed co-chair with Provost Robert Brown of the First Council on Faculty Diversity at MIT. She is a fellow of the American Academy of Arts and Sciences and a member of the Institute of Medicine of the National Academy of Sciences.

I am a molecular biologist and a professor at the Massachusetts Institute of Technology in the United States. Three years ago, in March 1999, MIT published the results of a study on the status of women faculty in its School of Science. My intention today is to review briefly what the study found, and then to tell you how MIT has responded to the findings. In particular I want to talk about some very remarkable progress for women faculty as a result of this study. However, last night one of your colleagues told me that, in addition, I should tell you a personal story of the MIT report. So, with apologies to several of you who have already heard this story, I will do so.

I would like to note from the start that when the MIT report was first published, it resonated with professional women in America. Not just scientists, but doctors, lawyers, women in business and government. Many wrote to tell us that our story was also their story. It seems to me from this meeting about women physicists in many countries around the world, that the MIT story was perhaps a very common worldwide story about the place of women in society and in the professions at the start of this millennium.

A PERSONAL VIEW OF MIT'S REPORT ON THE STATUS OF WOMEN FACULTY IN SCIENCE

I joined the MIT faculty 28 years ago. I believed that the powerful Civil Rights movement that had taken place in America, and the Affirmative Action laws that followed, had solved gender discrimination. I did not expect to encounter it in my lifetime. I thought the reason there were so few women scientists at Harvard, where I was a student, or MIT, where I became a faculty member, was because women had children, and male scientists worked long hours. For women the two occupations seemed incompatible.

I found out I was wrong. I found out that gender discrimination still exists. It was a great surprise. It took me 15 years to figure it out. I figured it out by watching how other women were treated relative to men of comparable ability and accomplishment. It took me a long time to figure things out because there were so few women to observe. But after 15 years, I knew that men and women who were equal in accomplishment were not valued equally in our system. At first the women I watched were older than I. I was so glad I had come along later and thus could escape the unequal treatment I saw them experience. So I was very surprised when after some years I saw that women younger than I were not treated equally either. I wondered why I was the one exception!

One day, an administrator told me I was underpaid. I and other women in my department got an average raise of 20%. Despite this, it still did not occur to me that I was being treated unfairly. I was certainly very unhappy, but I thought it was my own fault. I thought my unhappiness was due largely to the ferocious competitiveness of many

men in science, their inability to credit less aggressive people, particularly women, for their accomplishments, and my inability and unwillingness to behave like these men. Today, when I look back, I see that I was in denial. Denial is a wonderful thing! Denial protected me from the painful truth that I was not different from these other women. That I too was discriminated against.

But after about 20 years, several events happened that finally stripped the denial from even my eyes. For example, I needed a very small amount of lab space. I had a smaller lab than starting assistant professors and I had never asked for anything before. But when I asked for this tiny additional space, I could not get it. One day a woman who washed glassware for the labs said, “Nancy, how come these men have so much and you have so little!” It was that obvious, the difference. I struggled for more than 10 months to try to get this tiny amount of space. It was the accumulation of many incidents like this that finally enlightened me once and for all. These and what I had seen over 20 years in science. One day I knew I could no longer be a scientist unless things changed. I was very depressed for several days. But then, fortunately, one day I got angry. *Very* angry.

I decided that I would try to fix my problem. I would work my way up through the MIT administration until someone listened to me. Very soon I had worked my way right up to the president. I sat down to write him a letter: “Dear President, you may not know this, but there is discrimination in your institution. You should fix it.” The letter was pretty strong so I decided to show it to another woman professor and ask her to edit out any comments that might upset the president too much.

I chose a female professor I scarcely knew, a highly successful woman scientist who I admired from afar. I asked her to edit my letter. We were sitting in a small café in Kendall Square near MIT. This was the hardest moment for me. I had never spoken to her or to other female colleagues about this issue. Why is this, you might wonder?

I realize now that many women never speak up because they think, as I had thought, that if you say you are discriminated against its like saying you aren’t good enough. I felt that she would think badly of me. I imagined that she probably believed, as I had, that if you are good enough you can make it on your own—even in the face of discrimination. But I had found out this is not true. Even if she lost her respect for me, I would still be right. And I needed her help at this moment to make sure I wrote the most effective letter to the president.

I watched her read my letter. Her face did not change as she read. She did not appear to be changing her opinion of me as she read. Instead, when she finished reading the letter, she laid it down on the table between us and said, “I’d like to sign this letter. And I’d like to go with you to see the president of MIT. I have thought for a long time that senior women faculty here are not treated equally.”

That was the moment that changed my life forever, and returned me to science. And that was the moment the MIT story began. It was not me. It was them. It was true. Women were not treated equally. It wasn’t because they weren’t good enough. It was because they were not perceived as equal. In that moment I think we both intuitively knew the power of what we had discovered. One woman alone, complaining, is just that, a difficult woman who can be dismissed. But two tenured women was a force to be reckoned with. We were a force because Civil Rights and Affirmative Action had put power into our hands.

We looked at each other and said, “You don’t suppose there could be others?” We decided to make a list of the tenured women faculty in the six departments of science at MIT so we could poll them. That was when we made the startling discovery that there were only 15 tenured women faculty vs. 194 tenured male faculty in the six departments of science at MIT.

The very small number made it easy to poll the women. The first ones we approached responded with comments such as, “The same thing happened to me. Do you have anything I could sign?” They too had figured it out. These women scientists, who I had read about in the newspaper because they were always winning awards and being elected to the National Academy of Sciences. They agreed. When we finally located all of the women, about 10 agreed and could finish each other’s sentences. Among the others there were a range of opinions: “It never happened to me but I know it happens to other women.” “It happened to me some time ago, but not recently, but I want to join for the sake of my students.”

In the end, all but one of the tenured women decided to band together and ask MIT to do something about the problem. It was the solidarity of these extraordinary women that made things happen. One woman alone could not be heard. But together their power was enormous. *The power was in the group!*

The women discussed ways in which to try to tackle our collective problem. We saw the issue as one of trying to help the administration understand the problem. Being scientists, we thought we should collect data. So we decided to ask the administration to let us form a committee that would (1) interview the women faculty and collect their stories, and (2) collect data in part to investigate incidents they reported wherever possible, and also to review equity issues such as salary.

At MIT the women were very lucky. We soon got the support of both then Dean of Science, Robert Birgeneau (a physicist) and President Charles Vest. They realized that you do not get near-unanimous agreement from a group of

such highly successful and respected faculty unless there is a serious issue. They agreed to let us form a committee and perform the study we had proposed, even though the request met with considerable opposition at first from many other male faculty.

FINDINGS OF THE COMMITTEE ON THE STATUS OF WOMEN FACULTY IN SCIENCE

The committee, which I chaired, and which was made up of tenured male and female faculty, made the following important findings:

1. Young women, like older women before them, joined the faculty believing that gender discrimination is a thing of the past. They believed that only the greater demands of family that often fall to women will cause their professional lives to differ from those of their male colleagues.
2. Some time after tenure, however, many women faculty gradually came to feel marginalized. They saw that their male peers had taken up the powerful positions in the department, while no women had held such positions. They often found themselves working harder and harder to achieve their success while the men seem to be working less to achieve comparable or even greater success. The men were often out starting companies in addition. Most men had families, more than half the women did not.
3. The committee found that there was good reason for the women faculty's perceptions. Indeed, the men often had more—not just in power, but in tangible resources and compensations. While each issue or reward might be small, one could see how they could add up over a career to produce the significant difference in status the women felt, and indeed often truly had. Most damaging perhaps was the exclusion of women from professional activities—from powerful decision-making positions and committees in the department, from important meetings inside and outside the Institute, from inclusion as founders of companies with male colleagues, from lucrative boards, etc., etc., etc. In many departments the women were all but invisible to their male colleagues. And, indeed, in number the women were close to invisible.
4. The percent of female faculty in the School of Science (8%) had not changed for at least 10 and probably 20 years. There was no indication it would change soon.

Clearly, by listening to the women, by putting their stories on the table, and by collecting data, the committee had succeeded in making the problems women faculty experienced understandable to the administration, and to the male faculty (themselves departmental administrators) who had served on the committee. The results were profound. First, the Dean, given documentation, corrected inequities immediately on a case-by-case basis. Although these were small things, the corrections helped enormously to restore a sense of fairness. In addition, MIT could begin to try to address the issues in a more systematic and systemic way. Furthermore, the media attention the report soon received led to outcomes that none of the original participants could have imagined—both inside and outside MIT.

PROGRESS FOR WOMEN FACULTY AT MIT SINCE 1999

MIT took three major steps in response to the School of Science report: First, the president asked that equity be monitored throughout MIT so that any inequities be identified and corrected at once, now and in the future. He asked that all the facts be on the table. The provost asked that committees like that in the School of Science be established in all five schools of MIT. This was done by the deans of Engineering, Architecture and Planning, the Sloan School of Management, and the School of Humanities, Arts and Social Sciences. Extensive reports were prepared by each of four committees of male and female faculty, each committee chaired by a tenured woman. The reports were released to the faculty on March 18, 2002. They are available at <http://web.mit.edu/faculty/reports/>.

In addition to monitoring equity, the provost and the president took steps to address the issue systemically. They wished to ask why women, including women of color, as well as minority male faculty, all remain seriously underrepresented at MIT, as they are at essentially all leading research universities in the United States. To do this, they established a Council on Faculty Diversity. This council is co-chaired by the provost, me, and another professor who is African American. The council has three committees. One, the Quality of Life Committee chaired by Professor Lotte Bailyn, has prepared new family leave policies that have now been adopted by MIT in an effort to make it easier for women, and men, to balance family and work. A second committee, chaired by the dean of Engineering in collaboration with the provost and the other academic deans, has issued new hiring guidelines that will help to ensure that search committees have made their most effective effort to locate outstanding women and

minority faculty candidates. The third committee will study pipeline issues, particularly for minority candidates, who often leave the academic profession before receiving their Ph.D.

The third important response of the administration was to aggressively recruit women to the academic administration at all levels. Whereas there were no women in these roles in science and engineering in 1994, today there are about a dozen.

Most women faculty at MIT recognize how fortunate we have been. Women at other institutions often tell us they still struggle to get their administrations to acknowledge these problems. I would attribute the success of what happened at MIT to several factors, but particularly the following:

1. A partnership of committed leadership with committed tenured women faculty.
2. The collaboration and mutual support of the tenured women faculty, first within each school and now across the five schools of MIT.
3. The willingness of women faculty and administrators to devote much time to this work, the willingness of administrators to reduce teaching loads for some women faculty who performed this work, and financial support from the Ford Foundation and Atlantic Philanthropic Service Company to help women faculty who perform this work. I would particularly acknowledge the support of President Vest and Provost Robert Brown, and the remarkable women colleagues who have worked closely together for some years now. I am particularly grateful to my wonderful colleagues in the School of Science and my close working group colleagues Professors Gibson (Engineering), Bailyn (Sloan School), and Hammonds (Science, Technology, and Society); and Director of the Center for the Study of Diversity in Science, Technology, and Medicine).

BUT THERE IS MORE TO DO!

Despite what many of us view as remarkable progress for women faculty at MIT, we know that much remains to be done. Given the small numbers of women in some fields, and the slow rate of faculty turnover, many women faculty in some fields of science and engineering will not have many, if any, close female colleagues within their departments and fields during their careers. How does one prevent the marginalization of these women? We can monitor equity and make sure they are equally treated, but how do we ensure that colleagues include them in important professional interactions? This is a challenge for the future and one that we are working on now with the chair of the faculty, Professor Steve Graves, and individual department heads. In the end, it probably requires greater awareness and understanding of these issues among all of our faculty.

IMPACT OF THE MIT REPORT ON WOMEN SCIENTISTS OUTSIDE MIT

The publication of the “Report on the Status of Women Faculty in Science at MIT,” and its almost accidental release to the press, resulted in a remarkable public response. This came from women who had experienced the same problems but had not been heard, and from many who had been unable to hear them until the president of MIT heard the tenured women in the School of Science. In his comments that accompanied their report, the president wrote: “I have always believed that contemporary gender discrimination within universities is part reality and part perception. True, but I now understand that reality is by far the greater part of the balance.”

The story received front-page coverage in the *Boston Globe* and the *New York Times*. We were deluged by e-mail from women at other institutions telling us of similar problems. I was invited to the White House where the President and First Lady of the United States thanked MIT and the women faculty. I was asked to give many talks on this topic at universities around the country. Wherever I went I met women grappling with the same issues we had identified. Given this response, the president of MIT called a meeting of the presidents of nine research universities to share experiences. This powerful group made a commitment to address bias on their own campuses, along with the underrepresentation of women and minorities in science and engineering, and to meet again to review their progress. A number of these and other universities have performed, or are performing, equity analyses similar to those performed at MIT.

Although the tenured women faculty in science at MIT had set about merely to remove obstacles to their research and teaching and to improve the situation for their students, it seems apparent that what they were dealing with are manifestations of broad societal issues involving the status of women and their role in the scientific and other professions. It will be interesting to look back in 20 years and see whether the efforts of the women faculty at MIT contributed to making scientific careers more accessible to a larger number of young women who share their passion for science.