

Momentous Mentoring of Women Scientists

There are many examples where mentorship makes the difference between success and failure. The best mentoring is really empowerment. As mentors our goal is the empowerment of young scientists.

Women scientists in particular need empowerment because they receive so much discouragement. We can play an important role by having positive expectations, offering guidance and encouragement, and opening doors. Here I describe some of the ways mentors have helped me and try to draw some lessons from those experiences.



Alice S. Huang

Positive Expectations

Fortunately, there are many individuals who have positive expectations for women. My father was such a person. He impressed on me that I could do anything that I set my mind on doing. I grew up not knowing that there were things that little girls did that were different from what little boys did. Since I went to all-girls schools from kindergarten through college, it seemed the norm that women were leaders and able to take charge.

And I was lucky that my thesis advisor, Robert R. Wagner, who always appreciated my capabilities, said, "You are going to be a professor some day." That set my trajectory. I knew that my next accomplishment would be to become a science professor.

Mentoring Small and Large

Mentors can offer advice on large issues, but sometimes a small piece of encouragement can help. For example, John Enders said, "Feel free to come by and tell me about your work and do send me your preprints." So I started to send preprints to elders in my field whom I respected. The preprints had a good chance of being read and thus more people knew what I was doing and could comment on my work.

Life as an assistant professor was very demanding. I was in a new marriage and had a

baby as well as having all the responsibilities of teaching, setting up a lab, hiring support staff, and being responsible for the livelihoods of

others by securing grants. That is when I discovered another kind of mentor: the women in the secretarial pool. I was the first female professor they had seen. They not only gave top priority to my manuscripts and correspondence, they counseled me about how to avoid confrontational situations in the department.

Relatives can give wise advice too. My mother-in-law, Gertrude L. Baltimore, a professor at Sarah Lawrence, told me to delegate housework to paid help. She suggested that I hire someone from 2–7 pm rather than the usual 9–5 and that I give vacation time and paid sick leave. Thus we had help with after-school care for our daughter, light housekeeping, and preparation of dinner. When I got home, I was able to enjoy my family and relax rather than start cooking. And by offering benefits I was able to recruit someone amazingly loyal who stayed with us for 16 years.

Staying Focused

Mentors can play an important role by helping others to stay focused on what is essential. For example, it was natural for me to be drawn into studying the status of women when I first started as an assistant professor at Harvard in the early 1970s. My first study was on research associates, and it resulted in several women being immediately promoted to professorships. I served on committees on the status of women and coauthored a survey on women microbiologists that was published in *Science*. But luckily I was warned early on by Polly Bunting, a microbiologist who was president of Radcliffe, not to shortchange my science for these extracurricular activities. She urged me instead to concentrate on my own career and do my best to move up the academic ladder to a position of power and influence.



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Making Contacts

Mentors can provide important introductions. My chair at Harvard Medical School, Ed Kass, accompanied me to Bethesda, MD, where he introduced me to the executive secretary of the National Institutes of Health (NIH) study section that funded my grant application. This man saw all the funded investigators in his section as members of his personal stable of scientific winners. The personal attention he provided was a tremendous help.

As another example, to help our young family Salvatore Luria at the Massachusetts Institute of Technology introduced my husband to a local biotech company in the 1970s. As a consultant there he not only earned a welcome fee on top of his associate professor's salary, but also learned about an industry that would play an extraordinary role later in our lives. We were also introduced to others who would become important for the development of our scientific careers: book publishers, meeting organizers, NIH Institute directors, journal editors, etc. My circle of contacts continued to increase.

Someone else who helped broaden my circle of contacts is Harlyn Halvorson, a past president of the American Society for Microbiology (ASM). Halvorson invited the new executive director of ASM to Boston and arranged for him to meet promising young microbiologists in the area. In this way I learned about the leadership of a professional society with which I would later be closely affiliated. Later Halvorson put me on the board of trustees of the Waksman Foundation for Microbiology, a group with which I am still actively involved.

Using Power and Finding Funds

When I began to take on administrative duties, I again benefited from mentoring. There were no courses offered then in good management of science. So when I became a dean at New York University, I was very fortunate to have the advice of two experienced professionals, Duncan Rice, a dean, and Sylvia Baruch, a vice president. They showed me how to use power, build consensus, lead and get others to follow, take credit for success and disown failure, and ask questions to get the right information for decisions. They truly empowered me.

Mary E. Clutter, the assistant director for the biological sciences at the National Science

Foundation, also came to my aid. She stressed the importance of obtaining and controlling funding in my role as dean. And she explained funding opportunities at foundations. Similarly, when I joined the board of the American Association for the Advancement of Science (AAAS), Bill Golden, one of the first U.S. presidential science advisors and great supporter of AAAS, introduced me to presidents of foundations. And I was encouraged by Purnell Choppin, then president of Howard Hughes Medical Institute, to visit foundation leaders in my position as dean.

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Lessons for Mentees and Mentors

What are the lessons from this detailed dissection of my career? For mentees, be aware that there is no way to know where sound advice and help will come from, so seek mentors widely. Focus not only on your own work but also on professional societies and volunteer activities within your department and institution. But in the latter be selective; do not engage in meaningless busywork.

Mentors should anticipate what is unknown to mentees. Don't just expect the mentee to ask questions and seek help. If problems and the future are unknown to the mentee, how can she ask the right questions or determine what sort of help to get? The mentor's goal is to expand the mentee's network and to support and personally empower her with feedback and encouragement.

Be aware that sometimes mentoring can go wrong. Sometimes mentors show tough love by telling young women trainees how hard it is in the real world and saying that a woman needs to be twice as good as a man to survive and succeed in science. The rationale is to prepare these young women by hardening them up. Unfortunately, only a few will rise to this challenge. For many it will be terrifying. Just this kind of discouragement could tip the balance and cause a trainee to quit science. There are too few women in science. We need to do all that we can to retain as many of them in the field as possible.

Another problem for the mentee is success. It is not easy to become a successful woman scientist without adapting to the mainstream culture of science, which is basically a male-oriented culture. There is a danger that we will begin to act and think like the guys. I've tried to find a balance,

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to be involved in feminist issues but not to the detriment of my career. And I try not to forget that I am a woman now that I have reached the top of my profession. I remember that long ago Polly Bunting urged me to pay back the help I'd received by helping other women.

Some young women believe that we in the U.S. are in a post-feminist era in which it is much easier for young women to realize their ambitions. I agree that, indeed, a great deal has been accomplished. But women still earn less than men for equal work. And the U.S. is not even in the top 10 nations in the world in equity between women and men. Feminism is still needed, and it is still important for women to empower women.

Mentoring for the Next Stage of Life

What will you face next as a mature scientist, and where will you find mentors for the next stage of life? How does one gracefully retire and

live out what may be one-quarter of a lifetime in a meaningful way? Of course, family and friends become important at this stage, and we all deserve some time to smell the roses. But if you still seek a life that is meaningful and related to your scientific interests, it will take thought and preparation. Plan ahead. Build up the network of friends and colleagues who can help. Look for mentors who have retired and are living full, meaningful lives. And don't forget to use your hard-gained wisdom to empower all of the women scientists with whom you come into contact. ■

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Notes

This article is based on a talk presented at the Rosalind Franklin Society Annual Meeting on December 18, 2010.

Alice S. Huang is President of the AAAS.

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MBoC Publishes Review of Kyoto Morphogenesis Meeting

The March 15, 2010, issue of *Molecular Biology of the Cell (MBoC)* includes a review of the meeting “Building the Body Plan: How Cell Adhesion, Signaling, and Cytoskeletal Regulation Shape Morphogenesis.” This joint meeting of the ASCB, the Japan Society for Cell Biology, and the RIKEN Center for Developmental Biology was held in Kyoto, Japan, on September 21–23, 2009. Jennifer A. Zallen and Alpha S. Yap reviewed the meeting for *MBoC*. See www.molbiolcell.org/cgi/content/abstract/21/6/845. ■

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