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Guest Editorial

Victoria Greene, Vanderbilt University, Member of CSWP



Victoria Greene

Discussions of mentoring have become so common, that it is tempting to think that by now everyone is participating in a successful mentoring relationship on one side or the other. In fact, such significant obstacles as failing to recognize the need for mentoring and difficulty in finding effective men-

toring impede what should be a powerful tool for women physicists' career development. Many aspects of the process are not obvious and a deeper look into how good mentoring can enhance a career and how to find good mentors.

I have taken a pragmatic and extremely strategic approach to my career as a physicist, treating my development as a researcher, a teacher, and an administrator as coupled problems to be solved rather than as valuable qualities to be developed. This careful approach largely stems from the fact that I became a single mother well before I graduated from college, suddenly

and fearfully with sole responsibility for the support of my young son. Until then, I had assumed that my plans for the future would be predominantly shaped by the intellectual passion I felt for particular research problems. Afterwards, I viewed most career decisions in terms of what would help make me a better provider. In large part, this dispassionate view has worked well and in fact, I did not have to compromise on the research I find most compelling on the way to my current position as a full professor of physics at Vanderbilt University.

Because of the analytic approach I took to career planning, I did not worry too much about finding a mentor after graduate school, taking as I did a checklist approach to the various milestones that I would have to meet in order to succeed at a research university. Although a mentor is not needed to know that you must publish papers, get funding, satisfy your students, and sit on committees, one can be invaluable in keeping even such basic goals in the forefront. Armed with a global to-do list, I sailed through promotion milestones efficiently and effectively. But since those early days, time and experience have taught me much about the value to be added by good mentoring. Looking beyond the career as a pass-fail exam, I understand that both success and

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Horizontal Mentoring Alliances: Resonant Phenomena

Cindy A. Blaha, Amy L.R. Bug, Anne J. Cox, Linda S. Fritz, and Barbara L. Whitten

Introduction

An email appeared out of the blue from someone I did not know at Harvey Mudd College. It invited me to participate in an NSF-sponsored mentoring alliance for senior women faculty in physics at liberal arts colleges. "Why?" I asked the email, "Why me? Why a mentor? I am a mentor to students, junior faculty in my department, and women faculty across the sciences. Why would someone mentor me? And what is "horizontal mentoring" anyway?"

This describes the initial reaction of members of what would soon become our Alliance, based on the standard mentoring model of a senior person imparting wisdom and strength to a younger colleague.

As I re-read the email, I wondered, "Did someone know? Has someone seen through my façade of being an organized, efficient, successful senior faculty member? Does someone know I need mentoring, even now at this advanced point in my career?"

We all know that mentoring is an important component of a scientist's career, and we tend to think of mentoring for students and pre-tenure faculty. But we need advice and support all through our careers.

- Teaching and service loads often increase in mid-career, when we are no longer protected by our senior colleagues.

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Minority Bridge Program Hosts Workshop

By Gabe Popkin, APS Education Program Manager & Sara Webb, APS Education & Diversity Project Coordinator

On June 13-15, APS brought together a group of university faculty, students, and administrators for a workshop to address the low participation of minorities in physics graduate programs. The workshop was the culmination of the first year of the Minority Bridge Program (MBP), which aims to increase the number of under-represented minority (URM) physics majors making the transition to graduate school. Currently around five to six percent of physics PhDs are awarded to URMs, representing a significant drop from the bachelor's level, at which 10% of degrees go to URM students.

The goal of the MBP is to develop "bridge programs" that facilitate the transition to graduate school for physics students from under-represented minority groups. During its first year, project manager Michelle Iacoletti conducted site visits to Minority Serving Institutions (MSIs) and held meetings with Doctoral Granting Institutions (DGIs) to learn about the issues involved, and recruit participants. Project director Theodore Hodapp, who is Director of Education and Diversity at the APS, says, "Talented minority students who are choosing not to go on in physics represent a tremendous amount of unrealized potential for the country. The Minority Bridge Program is a major step aimed at closing the gap between undergraduate and graduate programs for these students, and for providing the next generation of mentors."

Fifteen faculty members from MSIs and 15 faculty from DGIs attended the workshop from June 13-15, 2010, along with undergraduate and graduate students, members of the MBP Steering Committee, National Science Foundation program officers, and APS staff. The minority-serving institutions represented were primarily historically black colleges and universities and Hispanic serving institutions that have strong undergraduate physics programs; the doctoral-granting institutions comprised many of the most prestigious and largest-enrollment programs in the country, including Berkeley, Harvard, MIT, Stanford, the University of Arizona, and the University of Maryland.

Faculty from several institutions already offering bridge programs gave presentations describing their models. One such program is the Fisk-Vanderbilt Masters-to-PhD Bridge Program, which since its inception in 2004 has enabled 30 students (16 of whom are women) to successfully "cross the bridge" from Fisk University to a PhD program in the physical sciences at Vanderbilt University or another institution of their choice. Co-director Keivan Stassun, a Vanderbilt University physics and astronomy professor, said the program looks for unrealized or unrecognized talent in potential students and then puts

individualized measures in place to help them succeed.

Workshop participants also heard from a panel of current minority graduate students about the important roles mentors played in their success. Vanderbilt student Erica Morgan spoke about the importance of mentorship in navigating the transition to graduate school: "My mentor set clear standards and held me to those standards." Student panelists also stressed the importance of a mentor's ability to understand and provide support on personal issues that affect student success, such as financial issues, feeling like part of a community, and family considerations.

Breakout discussions and group feedback sessions encouraged candid conversation and networking, which participants said led to valuable connections. Willie Rockward, a physics professor at Morehouse College in Atlanta, Georgia, stated that "the MBP Workshop stimulated a strong pulse of excitement, thoughtfulness, and collaborative synergy among the vast cross-section of students, faculty, and administrators from minority and majority institutions."

"MSI and DGI faculty often don't go to the same conferences, and consequently don't have enough opportunities to network with each other," says Iacoletti. "One of our goals in holding this workshop was to provide a venue for these kinds of connections to be made."

The MBP recently received further recognition and support through a resolution passed by the APS Executive Board in June:

The American Physical Society recognizes the significant disparity in participation by under-represented minorities in physics at all levels, and commits to support the Minority Bridge Program that will establish a set of programs and related efforts to help under-represented minority undergraduates transition to doctoral degree-granting programs and obtain PhD degrees in physics.

Funding for the workshop and other efforts comes from the National Science Foundation. In the following months, project leaders will work to finalize the structure for the program and secure funding for a large-scale, multi-year initiative. ■



Guest Editorial, *continued from page 1*

failure have many gradations. It might well be true that most of us do not absolutely need a mentor to survive in our careers, but it is surely also true that being open to mentoring opportunities along the way can make the difference between being good enough and truly shining in our chosen work. A solid relationship with a mentor can also reduce work stresses, freeing energy for more creative and rewarding pursuits.

For the past few years, I have held an administrative position as Executive Dean of the College of Arts and Science here at Vanderbilt. One of my major roles is to oversee the tenure and promotion process for the college: I chair the dean's review committee, review dossiers, and prepare memoranda supporting promotion or, much less frequently, a negative recommendation. Through this work, I have had the privilege of viewing, in great detail, the stages of an academic career, from the first reappointment to the promotion to full professor. One of the striking aspects of this overview is the effect that strong mentoring can have on the trajectory of a career. The review process itself is a form of mentoring, especially for the reappointment reviews that take place in the second and fourth years. Here, we can provide suggestions to the faculty member on a possible shift of focus or a new publication strategy and to the department chair as to how he or she might ensure that a tenure dossier is the best possible showcase of the candidate's accomplishments.

Our college also has a formal and confidential mentoring program in which an assistant professor can request a mentor. This person is carefully chosen from a neighboring field, so that a physicist would likely be paired with a chemist or biologist. The mentors never come from the same department so that there is no question of a mentor ever being in a position to discuss or to vote on the future of his or her junior colleague. No one will ever know that a mentor has been requested or assigned unless the junior member of the pair chooses to reveal the fact.

These interventions can lead to a significant enhancement of a career when coupled with the more specialized mentorship provided by the department chairs and colleagues and senior researchers. Junior scholars usually come with the basics well in hand, but might not grasp the finer points, either of research or career planning. Good mentoring can add the polish that can take a faculty member's career from good enough to extraordinary. Frequently strong candidates think, rightly so, that they do not need to seek out mentoring because they know what they need to do. In doing so, they miss opportunities to hone their growth as scholars. I have seen seemingly stronger people surpassed in terms of scholarly accomplishments by colleagues who were open to the possibilities inherent in a good mentoring relationship. A scientist who is already publishing copiously could benefit from the suggestion that it is time to submit to more prominent journals. One who is an unstinting and excellent mentor of graduate students may need to be told to preserve some time to develop new research directions. A

professor who is in demand for many public lectures might need to put this energy into presentations at professional conferences.

As well as recognizing the importance of accepting mentorship, it is also valuable to realize that mentoring might come from unexpected directions such as while mentoring someone else. Being the first woman professor in my department, and one of a very few women scientists at my university, I was effectively on my own when it came to navigating issues such as inappropriate comments, excessive service obligations, and a very free-form family leave program. In many ways, I had to put on blinders in order to avoid getting caught up in the frustration and irritation at all of the nonsense that can be found in even the most well-meaning departments.

Once I began to act as mentor to younger women faculty and graduate students, I was able to see more clearly the difficulties that I had encountered reflected in the challenges that the women who came after me continued to face (although, happily, we now have a well-defined and generous family leave policy.) Things that I had learned to overlook when I was coming up were easier to recognize when they were happening to someone else, and much harder to ignore. In the process, I learned so much from these younger women that I began to appreciate the benefit of "mentoring up," wherein a senior person can learn a great deal from a fresh generational perspective.

Peer mentoring can be another resource, especially for mid-career women scientists. Such mentoring can be extremely helpful in avoiding a post-tenure slump. At the upper ranks, many useful discussions may take place among the lone senior women in the science departments. A possible transition to administrative positions may necessitate new mentoring relationships. A career trajectory that is flat after a certain point may be no more than a lessening probability that a senior person will seek out mentors. I believe that more emphasis on mid-career mentoring and structured programs to provide such would do much to reduce the time it takes for an associate professor to be promoted to full. We need to consider that expectation that mentoring will be an ongoing part of a career rather than a tool solely for the early stages of development.

A broad consensus acknowledges, in principle, the importance of mentoring relationships in career development, but for this to be more than pro forma we must expand our conception of these interactions and draw on experience and empirical knowledge to make them effective. We should be open to what we can learn from our younger colleagues and be prepared to seek help from our peers. We should see mentoring as an activity that can add extra value to a strong portfolio as well helping the more vulnerable to thrive. We should consider that mentors might help us to maintain a high level of creativity and productivity throughout the entire arc of our careers. We should explore and encourage a wide variety of mentors and mentoring opportunities, including those well outside the traditional domain. ■

Horizontal Mentoring Alliances, *continued from page 1*



- Leadership opportunities, local and national, appear.
- Research interests change as graduate school momentum runs out — should we try to maintain this research or change fields?
- Family needs change as our children grow older and our parents age.

As we negotiate these changes and balance these commitments, we need advice and support of our peers. But senior women physicists are rare in the very male physics community. So peer advice can be hard to come by.

How Our Alliance Works

The email mentioned above came from Kerry Karukstis, a full professor of chemistry at Harvey Mudd College. With Bridget Gourley at DePauw University, Laura Wright at Furman University, and Miriam Rossi at Vassar College (senior women chemists), she wrote a successful grant application to the NSF ADVANCE institutional transformation program, titled Horizontal Mentoring Alliances to Enhance the Academic Careers of Senior Women Scientists at Liberal Arts Institutions. Their goal was to

enhance the leadership, visibility, and recognition of female full professors at liberal arts institutions in the areas of chemistry and physics using a “horizontal mentoring strategy”.... Our project involves the formation of five-member alliances of senior women across institutions to accomplish such horizontal mentoring.

After being (mysteriously) selected and agreeing to participate, we planned to meet for the first time at the APS meeting in April of 2008. We were somewhat confused about how to organize ourselves, but we began over lunch, by introducing ourselves. In addition to the usual professional information, we included our family situation and a brief discussion of career issues about which we had concerns.

A theme emerged during this conversation and later ones; each of us felt uncomfortable about our research. We all realized that we had drifted from our original training into administration, curriculum development, and diversity issues. We were concerned about being “unproductive” compared to physicists at research universities, or to the one or two “superstars”

in our home departments and were wondering if we should try harder to return to the kind of work we had been trained to do in graduate school.

We agreed to think more about these issues and make them the focus of our next meeting, the following summer. To keep in touch between meetings, we agreed to internet conference calls (via Skype) every other week and to begin our Alliance essentially as a book group to discuss Ellen Daniell’s *Every Other Thursday* (2006). This book about a mutual mentoring network of women scientists was a good touchstone for our conference calls. In reality, we rarely talked much about the book itself, but it provided a context in which to share challenges, insecurities, and difficult career issues.

At our summer 2008 meeting we returned to the theme of our research. We had each worked to define a possible path or paths toward a more satisfactory research career, and to identify some concrete steps we could take along that path. We each took time to describe our possible paths, while others in the group listened carefully and offered comments and advice. Each person ended with a decision and a series of steps to try. One member of our group expressed the following sentiment:

I had been working on diversity in physics for about ten years, getting farther and farther from my original field. I love the diversity work, and feel that it’s an important contribution to the physics community. But more and more I missed “real physics.” I wondered whether I should spend my upcoming sabbatical on new diversity projects, or begin a new technical field. The group advised me, if I really missed technical physics, to go ahead and move into a new field. I just finished a very interesting and productive sabbatical, beginning a new research project in atmospheric physics.

Another member of the group decided that her curriculum development work was her research—she could continue to develop that work without feeling guilty that she was no longer doing her graduate school experimental work. Another decided to prioritize her own research more.

We had money to travel to meet together and felt obligated to gather on conference calls, but this only begins to touch the surface of why our Alliance had such good results for us. Almost from the beginning, we were willing to open up with each other. Why were we willing to do that?

One of the reasons was that we had nothing to lose and everything to gain: none of us would be evaluating another on our campus; none of us would be evaluating or competing with anyone else for grant applications because our sub-fields were too different. While this is likely to have contributed to our success as mutual mentors, we also think that our successful group is something akin to a “resonant phenomenon”. The other members of the group “get it” (whatever the issue) right away, without ancillary explanations or

elaborate justifications, because they've had similar experiences. They are not just willing to sympathize, but they are truly able to empathize. For many of us, it was our first time in a group with others who are so much like us — or as one member put it: “For the first time I know that it is really not ‘just me’ in the various career issues I have faced.” This group was, then, like a sigh of relief. It brought us out of the isolation of being a sole senior woman physicist on campus, and into the warmth and understanding of a group of savvy, senior, women physicists.

Part of the resonant phenomenon was that we were not only allowed, but encouraged to bring everything to the table. We did not have to separate our professional selves from the rest of our lives. Our goals and accomplishments included things like making a doctor's appointment for a check-up, getting on-line checking established for paying bills, and going to a yoga class regularly. This was a group that not only recognized, but actually required that we include all of our life in the context of career issues. This may have been because our group members had to deal with a number of family crises and some dramatic health issues. But even beyond that, we felt encouraged to approach our mutual mentoring more holistically. As one member put it:

I am allowed to bring all the juggling balls to the table — family-work issues, research-teaching conflicts, community service-personal need balance. I no longer need to hide the big ball of family needs. I can discuss all my goals and commitments with others who won't scoff so I can bring it all into better balance.

Out of a resonant phenomenon, our Alliance has grown into a supportive network. We encourage each other to define goals and priorities to help us focus on important projects and be less distracted by lesser demands. We help each other balance our professional and family demands. We have provided different perspectives when dealing with particularly troubling issues. For example, one of us mentored a junior woman scientist who received a negative tenure recommendation from the promotion and tenure committee. As a group, we worked together to help her provide support for her junior colleague. And we celebrated with her when her colleague ultimately did receive tenure.

Our Alliance has been more helpful to each of us than we expected when we first agreed to participate. As one member put it: “Our conference calls and meetings are intellectually invigorating as well as one of my most valued sources of wisdom, support and encouragement.” While another member says: “Our Alliance has given me the courage to accept challenging leadership and difficult tasks because I know I have a backup group for brainstorming and support.”

Is this a model for others?

By now we hope that you are all thinking, “This sounds great! How can I have an alliance of my own?” We think that this is a good model, not just for senior women at liberal arts colleges. We think that women at

different career stages, different institutions, and different subfields of physics would benefit by a similar network of supportive peers. Minority physicists already have effective networks which for the most part center on encouraging students. But these networks might be formalized to provide mutual support and advice.

Professional groups like APS and AAPT should consider this an effective way for isolated physicists to support and advise each other. The APS CSWP and COM, AAPT's Committees on Women and Minorities, as well as NSBP and NSHP, might facilitate the formation of Alliances by establishing lists of potential participants, similar to the roommate selection forms used for meetings. Face-to-face meetings are an essential part of our Alliance, but these meetings could be organized around national or regional meetings. In fact, inspired by our example, a group of women physicists in Ohio are planning to organize a group that will meet regularly at the Ohio Section APS meetings.

Our Alliance has benefitted from having NSF support, and we believe that funding agencies with an interest in diversity in physics should find this a cost-effective way to support women and minority physicists. The costs are modest and the benefits are many — all five of us feel revitalized and have found new areas for professional endeavors. ■

(This is a modified and abridged version of “Why Does Mentoring End,” which will appear in an ACS Symposium Series volume tentatively titled “Mentoring Strategies to Facilitate the Advancement of Women Faculty,” edited by Kerry Karukstis, Bridget L. Gourley, Miriam Rossi, and Laura Wright.)

Essential Elements of our Alliance

- We are similar in age and rank, so our professional and personal issues are similar.
- We are from different institutions and subfields, so we are not in competition.
- NSF funding helped us (and our colleagues) take this project seriously, so it didn't get lost in the myriad other demands on our time.
- We are all personally committed to the Alliance, and make time for it in our busy professional and personal lives.
- The initial face-to-face meeting was essential for us to get to know each other and build trust. Eating meals together created an informal atmosphere.
- Regular Skype calls keep us in touch with each other's lives at no cost.
- Reading Every Other Thursday helped us with our initial agenda and gave us some language to identify and discuss our dilemmas and challenges.
- Regular (once or twice a year) meetings maintain our relationships (and are a lot of fun).
- Phone calls and meetings involve discussion of immediate issues and longer-term projects.

Two Blewett Scholarships Awarded

By Mike Lucibella, APS Science Staff Writer



Natalia Drichko

This year APS has announced two women as recipients of the M. Hildred Blewett Scholarship. Chosen by a sub-committee of the Committee on the Status of Women in Physics, the two are Natalia Drichko at Johns Hopkins University and Marija Nikolic-Jaric at the University of Manitoba.

Each year the committee selects women who are returning to their research careers that had been interrupted for family or other reasons. The scholarship is a one-year grant of up to \$45,000 that can be used towards a wide range of necessities, including equipment procurement, salary, travel, tuition, and dependent care. This is the sixth year the scholarship has been awarded.

Natalia Drichko

After taking time off to move half-way around the world and start a family, Natalia Drichko has returned to condensed matter research.

She is originally from Russia and earned her MSc from St. Petersburg State University in 1996 and her PhD from the Ioffe Physico-Technical Institute also in St. Petersburg in 2002. She was studying organic conductors and superconductors and traveling back and forth between Russia and Germany as part of the Alexander von Humboldt Foundation Fellowship for her post-doctoral research.

While at a conference in Europe, Drichko met Peter Armitage, an assistant professor at Johns Hopkins University. The two started traveling together and soon fell in love. "It's kind of a romantic story in a way. I was still living in Europe and he was living here," Drichko said.

The two decided to get married and move to the United States. It was a hard decision at first for Drichko to leave her research and move to the other side of the world. She had only been to the United States twice before, once for a conference, and once while visiting Peter. Back in school there was a clear path for her to follow with her career, and with the move she would have to stop.

"You are changing your life completely in every possible kind of way," Drichko said, "The big thing was kind of just to find a way to adjust to everything." A year and a half ago, Drichko gave birth to her daughter. Even after moving and while caring for her child, she continued to work to finish up the projects she had started in Germany. However taking care of her new member of the family meant Drichko would have to take time away from research. The whole time she knew that she would return to research, it was always just a question of when not if.

She was in luck that Johns Hopkins University had a large condensed matter department and she would be able to carry on research similar to what she had been studying in Europe. She found the faculty at the University friendly and helpful, but starting up

from scratch was a huge effort, and needed funding to take off. She found an application for the Blewett Scholarship online and applied.

"This is an amazing opportunity," Drichko said. "It helped enormously because I can do the research I am very much interested in at a great university."

She has started researching the magnetic ordering in materials in connection to unconventional superconductivity. With the funds she plans to set a lab to investigate the properties of these superconductors, including using a Ramen spectrometer that other researchers in the university would also find useful.

Marija Nikolic-Jaric

After completing her long delayed PhD, Marija Nikolic-Jaric has been able devote herself to her research and is looking forward to a career as a physicist. She is currently at the University of Manitoba in Winnipeg as a post-doctoral research fellow where she is studying biophysical flow cytometry. This is her second year being awarded the Blewett Scholarship.

In 1996, Nikolic-Jaric was just weeks away from defending her thesis when she and her husband received devastating news. He had been diagnosed with a rare and terminal type of brain tumor. Already juggling her thesis, pulling together academic credits from multiple universities and caring for her four-month-old son, Nikolic-Jaric made the difficult choice to put her degree on hold for a while. After her husband's death the following year, she moved back to Canada to be closer to her parents.

While away, she volunteered at her son's elementary school, helping to teach math through games. Though she enjoyed working with the students, she wanted to finish her degree and return to research. "The challenge of research was definitely missing there," Nikolic-Jaric said, "I knew I had to just go back to what I loved to do the most."

Nikolic-Jaric continued to work at pulling together her credits at Simon Fraser University in Vancouver. In 2007, the death of her step-father delayed her PhD defense an additional semester. In January of 2008, she was able to defend her thesis and earn the PhD she started years earlier.

She said the Blewett scholarship had given her a tremendous psychological and financial boost. "One of the big worries, which is how are we going to pay for the research, is gone now," Nikolic-Jaric said.

After receiving her PhD, she started her post-doctoral work at the University of Manitoba researching the behavior of rotating asymmetrical particles in electrical fields. Since then she has moved into other aspects of biophysical flow cytometry and exploring the physical properties of biological material in the context of microfluidics.

With the scholarship she has been able to travel to different academic conferences including the APS



Marija Nikolic-Jaric

CSWP would like to sincerely thank Passport Systems Inc. for their donation to the Blewett Scholarship Fund.

March Meeting and the upcoming MicroTAS in the Netherlands. She also attended the Summer School of Nanotechnology in Edmonton.

In addition to her research as a post-doc, Nikolic-Jaric has been helping the graduate students working with her to thrive in academia. Many of them, especially the women she's been working with, have the same questions about juggling careers and families that Nikolic-Jaric confronted when in their position.

ASK THE PHYSICS MENTOR

By Kawtar Hafidi, Argonne National Laboratory, Member of CSWP and 2010 U.S. DOE Office of Science Outstanding Mentor

I entered graduate school with two full years of support from a fellowship awarded by my undergraduate institution. I easily found a faculty member to work with, but at the end of the second year, the faculty member told me that she would not be my thesis advisor. What should I do?

Answer: Unfortunately, this is a situation that many graduate students encounter in their first years of graduate school before settling with a thesis advisor. Indeed, it is typical for the first two years to be a 'try-out' period for the student and his/her potential advisor since students typically spend most of that time taking classes.

It is also quite common that students are supported as Teaching Assistants (TAs) for the first two years where they do some research with faculty typically during their first summers. At the end of the two years, they need to find a thesis advisor who will also provide research support. They usually, but not always, continue working with the same faculty member. However, several universities have a policy that the students will not always be able to continue working with that same faculty member and this policy should be made clear at the beginning to all students.

The big questions here would be:

- What commitment did the faculty member make to the student?
- Was this commitment implicit or explicit?
- When should the faculty member have notified the student of the decision?
- What are the policies of the institution?

The answers to these questions are important to make sure that the student was treated fairly and that the faculty member was not just taking advantage of free labor for two years.

In general, there are many possible reasons things don't work out. The most obvious one is that the faculty member might have lost funding or he or she might not think that the student is motivated enough. For dedicated advisors, working with students in their first years is an important investment. The time invested in mentoring junior students exceeds the value of their

"I guess I'm learning what it means to be an 'academic citizen,'" Nikolic-Jaric said. "One of the most exciting things was being able to meet young women in science and talk to them."

With the scholarship, she hopes to hire a full time summer student and experience mentoring first hand. In addition, she's received a grant from the Canadian Microsystems Corporation for lab equipment. ■



Kawtar Hafidi

work. If a student is turned away at the end of their second year, it is usually an important loss of investment for the advisor. However, the advisor should try hard to let the student know as early as possible that that is the case. Departments should be urged to have a policy about this and to make this policy very clear to students and faculty. Such a policy would be a mandatory six months performance evaluation discussion between the student and his/her advisor. The outcome of the discussion will allow both the student and advisor to raise and resolve any issues or maybe decide to break the relationship in a timely manner.

Back to the question, the first thing the student should do is to ask his/her initial advisor why that person is unwilling to serve as his/her thesis advisor. It could be lack of funds, personality mismatch, specific professional problems (e.g. inability with lasers or machining or electronics) or general professional problems (e.g. lack of creativity or drive). Specific professional problems can be overcome. I know of cases when a postdoc was hired despite a dreadful letter of recommendation from his thesis advisor, because the postdoc had the skills needed for the project at hand (the said postdoc is now a full professor).

If no consensus can be reached, the student should contact what is frequently called the Graduate Program Director. If the Graduate Program Director cannot help, then the student should talk to the Department Chair. The student can also approach other faculty that he/she feels comfortable talking to (e.g.: professors he/she has met in his/her courses). Other potential advisors do not ask for recommendation letters but do frequently talk to previous advisors.

This issue's Ask the Physics Mentor question comes from the APS Ethics Case Studies site prepared by a special APS Task Force on Ethics Education. Find more case studies at www.aps.org/programs/education/ethics/.

Student Mentoring Experiences

By Erica A. Morgan, Graduate Student, Fisk University



Erica A. Morgan

As the quest to the Ph.D. becomes more real, I can't help but acknowledge the phenomenal mentorship I've been afforded and how it has been instrumental in my academic choices.

Beginning at age eleven my parents decided I should devote my summers to participating in pre-college programs designed to increase the number of underrepresented minorities majoring in science, technology, engineering, and math (STEM) subjects sponsored by the STEM departments at Tennessee State University (TSU). Little did I know that would be the beginning of an ongoing mentoring relationship that would shape me professionally and ultimately encourage me to pursue graduate study in physics.

The faculty, staff, and students affiliated with the pre-college program equipped me with skill sets and processes that have proven useful as I navigate my academic career. Every instructor expected excellence from me and in turn devoted their time and abilities to molding the students in the program.

Once I entered TSU as an undergraduate the trend was the same. The entire STEM community was committed to the success of the students. A student leadership council was established and was charged with developing an infrastructure that would ensure the success of each student. I know exactly what you're thinking. "They allowed 19 year old college students to manage?" Well, yes! Led by the Dean of the College of Engineering and faculty members from physics and mathematics, we managed the teaching assistant program, the mentorship program, hosted forums and workshops for students led by scientists and engineers from industry, and gave infinitely many presentations to university administration. Every student had an active role to play. My experiences there and the faculty members that invested in my success are part of the reason I chose to go to graduate school.

The most rewarding part of my undergraduate career was being selected to manage the pre-college programs that I had once participated in and that had such heavy influence on my life. Though it was one of the hardest things I had ever done, it was also an experience that taught me the importance of mentorship

and how delicate the mentor-mentee relationship is. It was extremely difficult to connect with each student such that they would be open to accept and implement concepts and methodologies being offered. Equally as difficult was the time commitment. Balancing the pre-college programs, course work and other requirements was challenging but I believe it made me well rounded and more experienced.

It has been my experience, as a mentee and a mentor, that for a given mentor-mentee pair there is no one equation that can be applied to ensure its success. I would venture to say that one mentoring pair requires a system of equations. The variables in each equation must be readily identified and agreed upon by both mentor and mentee. For example mentee variables could be (1) I need guidance applying for fellowships or (2) I need assistance in a particular course. Mentor variables could be (1) I have a certain time sensitive obligation to meet or (2) I would like to help you work on your next publication. All variables must be acknowledged and goals must be established. Each person must be willing to do what's necessary to ensure the system remains in equilibrium.

Since my decision to pursue graduate studies, I have had quite a few mentoring relationships, some more formal than others, some more favorable.

As a mentee, when I was not clear about what a mentor expected from me or was blindsided by a mentor's "variables" or, conversely if I did not clearly express my "variables" the mentoring relationship became strained. It is extremely important for both participants to be forthright.

The combination of information overload, being hurled into foreign roles, unfamiliar expectations, and having to learn to become proficient in many tasks can be extremely daunting. Mentorship is necessary. No matter the nature of the mentoring relationship, spontaneous or structured, mentors serve as a benchmark for students and help develop knowledge, skills, and interpersonal abilities. It is wonderful to see organizations like the American Physical Society raising awareness about the importance of good mentorship. ■

Are you looking for a graduate school that is "female friendly"?

Check out the results of an informal survey and read what departments say about themselves at:

www.aps.org/programs/women/female-friendly/

Getting the Most out of Your Mentoring Relations

By Janet White, PhD, Research Portfolio Director for Cancer, Pfizer

As perpetual students in the University of Life, we learn from our experiences and the people we meet, how to survive in the scientific jungle. But the randomness and serendipity of this learning process often leave us wishing that we could have learned these lessons sooner, and less painfully.

The Dangerous Book for Boys, bursting with tips on everything a boy needs to know, has been on the bestseller list since its publication in 2007, and has spawned a number of successful sequels including *The Daring Book for Girls*. And now the wait is over for those of us struggling to understand how to succeed in careers as women in science with the publication of *Getting the Most of Your Mentoring Relationships—A Handbook for Women in STEM* (Springer, 2009) by Donna J. Dean, a former President of the Association for Women in Science.

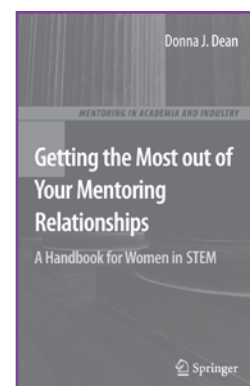
Don't be misled by the book's rather dry title. This is a survival handbook packed with juicy and practical advice on everything a woman scientist needs to know to build a successful and enjoyable career. Unlike many books on mentoring, this guide is intended for the protégée not the mentor and provides a roadmap to how to identify, engage and keep mentors. Dean encourages us to think outside the box when seeking mentors, and provides an extensive list of resources including e-mentoring websites.

The handbook is designed to be dipped into rather than read from cover to cover and, just like its author, is seasoned throughout with a strong dose of realism. How many books on mentoring caution that mentoring relationships are not perfect and provide a handy list of signs that indicate you should move on? Or include a chapter on the potential pitfalls of sexual harassment in mentoring relationships? The book is illustrated by numerous vignettes that describe the experiences of real women scientists of all backgrounds, ages, career stages and disciplines.

Much of the advice is equally applicable to both genders, although all of the examples are from women. The book targets women readers, who may lack sufficient senior female role models or an "old girls' network" and therefore need to take a more deliberate and proactive approach to career development than their male peers. Male readers will find it enlightening.

Chapter 10 "Voices of Experience" (or "Things your professor should have told you") is a must-read for every scientist starting out on an academic career path. This goldmine of wise advice succinctly summarizes how to build a strong scientific reputation, from presentation tips, to wise prioritization of your time and energies, to obtaining funding.

Every woman scientist should get this book – it could be your stepping stone to a happy and successful career. ■



Childcare Grants Available

What: Small grants of up to \$400

Who is eligible: parents/caregivers who plan to attend the APS March or April meeting with their small children or who incur extra costs to bring them along or leave them at home. Preference is given to early career applicants.

Deadline: Apply by **January 17, 2011** (for March) or **February 17, 2011** (for April)

Details at <http://www.aps.org/programs/women/>

These grants are made possible by funds from the Elsevier Foundation and the American Physical Society.

Grants are also available for the November Division of Plasma Physics meeting in Chicago.

Apply by **October 8, 2010** at <http://www.aps.org/units/dpp/meetings/dpp10/services.cfm>.



Professional Skills Development Workshops *for Women Physicists*

Improve your negotiation skills and learn to communicate your great ideas to colleagues.

Who may apply: Women postdoctoral associates and women faculty in physics. Each workshop will have one session aimed at postdocs and one session aimed at women faculty.



When: Sunday, March 20, 2011,
Dallas, Texas*

Friday, April 29, 2011,
Anaheim, California

Deadlines to apply:

December 10, 2010 (for March)
January 10, 2011 (for April)

First consideration will be given to applications received by the deadlines. Workshops will be limited in size for optimal benefits. Women of color are strongly encouraged to apply.

Participants are eligible to receive a stipend to help cover the cost of travel and up to two nights lodging.

Details at <http://www.aps.org/programs/women/workshops/skills/>

**These workshops are funded by a grant from
the National Science Foundation**

**Pending NSF Funding*

Please Update Your Address

Dear Gazette Reader,

The APS Roster of Women and Minorities is also used as the Gazette mailing list. If your address has changed and you wish to continue receiving the Gazette, please visit www.aps.org/programs/roster/enroll.cfm to re-register and select The Gazette Mailing List as your Roster group.

Questions? Contact Arlene Modeste Knowles at roster@aps.org. Keep reading the Gazette!

2011 Katherine Weimer



The Weimer award is open to any female plasma scientist who received her Ph.D. within the ten-year period prior to April 1, 2011. Nominations are active for one selection cycle (three years).

The award consists of \$2,000 and funds for travel to the annual meeting where the award is to be presented. The recipient will be invited to give a talk at the Division's annual meeting.

To nominate a candidate, send the following to women@aps.org:

- *A letter evaluating the nominee's qualifications identifying the specific work to be recognized*
- *A biographical sketch*
- *A list of the most important publications*
- *At least two, but no more than four, seconding letters*

Deadline is April 1, 2011.

www.apsdpp.org/prizes_awards/katherine_weimer.php



NEW! Career Development Speaker Travel Grant Program to provide assistance to physics departments that are trying to increase their career development activities and to raise the career awareness of students seeking undergraduate and graduate physics degrees.

The Committee on Careers and Professional Development will reimburse up to \$600 for one of two speakers invited to give presentations at colleges or universities on topics concerning careers in physics. Act quickly as there are a very limited number of Travel Grants available!

For more information and to fill out the online application, please visit:

www.aps.org/careers/educator/travelgrant/

Do you know a high school senior or undergraduate who is eligible for our minority scholarship?

Starting on November 1, 2010, eligible students can begin applying for the 2011-2012 APS Scholarships for Minority Undergraduate Physics Majors.

Eligibility Requirements:

- Applicants must be African American, Hispanic American, or Native American
- US citizens or permanent residents
- High school seniors, college freshmen or sophomores
- Majoring or planning to major in physics

www.aps.org/programs/minorities/honors/scholarship

Running in Circles Looking for a Great Science Job or Hire?



The American Physical Society (APS) Career Center is the best niche employment site for physical science and engineering jobs, with hundreds of jobs viewed by thousands of the finest scientists each month.

<http://careers.aps.org>

- > Research Physicist
- > Department Chair
- > Principal Scientist
- > Postdoctoral Fellowship
- > Plasma/Laser Engineer
- > Optical Physicist
- > Mechanical Engineer
- > Electrical Engineer

The APS Career Center is part of the *Physics Today* Career Network, a niche job board network for the physical sciences and engineering disciplines. Jobs and resumes are shared with four partner job boards—*Physics Today* Jobs and the American Association of Physics Teachers (AAPT), AVS: Science and Technology of Materials, Interfaces, and Processing, and IEEE Computer Society Career Centers.

APS
physics

AMERICAN PHYSICAL SOCIETY 2010-2011 TRAVEL GRANTS FOR WOMEN SPEAKERS PROGRAM

Limited funding is available for
the 2010–2011 academic year!
Apply online at [www.aps.org/
programs/women/speakers/
travel-grants.cfm](http://www.aps.org/programs/women/speakers/travel-grants.cfm)

Purpose

The program is intended to expand the opportunity for physics departments to invite women colloquium/seminar speakers who can serve as role models for women undergraduates, graduate students and faculty. The program also recognizes the scientific accomplishments and contributions of these women physicists.

Grant

The program will reimburse U.S. colleges and universities for up to \$500 for travel expenses for one of two women colloquium/seminar speakers invited during the 2010–2011 academic year.

Qualifications

All physics and/or science departments in the United States are encouraged to apply. Canadian and Mexican colleges and universities are also eligible, provided that the speakers they invite are currently employed by U.S. institutions. Invited women speakers should be physicists or in a closely related field, such as astronomy. Speakers should be currently in the U.S. The APS maintains the Women Speakers List which is available online at www.aps.org/programs/women/speakers/enroll.cfm. However, selection of the speaker need not be limited to this list. Neither of the two speakers may be a faculty member of the host institution.

Guidelines

Reimbursement is for travel and lodging expenses only. Honoraria or extraneous expenses at the colloquium itself, such as refreshments, will not be reimbursed.

Application

The Travel Grants for Women Speakers Application Form (www.aps.org/programs/women/speakers/travelgrants-app.cfm) should be submitted to APS identifying the institution, the names of the two speakers to be invited and the possible dates of their talks. Please note that funds for the program are limited. The Travel Grants for Women Speakers Application Form should be submitted as early as possible, even if speakers and dates are tentative, or if the speakers are scheduled for the spring semester. The application form will be reviewed by APS, and the institutions will be notified of approval or rejection of their application within two weeks. Institutions whose applications have been approved will receive a Travel and Expense Report Form to submit for reimbursement.

SEE FOLLOWING PAGE FOR APPLICATION FORM

WOMEN SPEAKERS LIST

Need a speaker? Consider consulting the American Physical Society Women Speakers List (WSL), an online list of over 300 women physicists who are willing to give colloquium or seminar talks to various audiences. This list serves as a wonderful resource for colleges, universities, and general audiences. It has been especially useful for Colloquium chairs and for those taking advantage of the Travel Grant Program for Women Speakers. To make the WSL easy to use, we have made the online version searchable by state, field of physics, or speakers' last names.



If you'd like to search the list to find a woman speaker, go to: www.aps.org/programs/women/speakers/

Women physicists who would like to be listed on the Women Speakers List or those who would like to modify their existing entries can do so at: www.aps.org/programs/women/speakers/enroll.cfm or see page 15.

APS has a companion program for minority speakers. Information on the Minority Speakers List and the Travel Grant Program for Minority Speakers can be found at: www.aps.org/programs/minorities/speakers

2010-2011 TRAVEL GRANTS FOR WOMEN SPEAKERS APPLICATION FORM

This form is also available on the Internet at www.aps.org/programs/women/speakers/travel-grants-app.cfm
This form must be filled out and approval received from the APS in order to be eligible for up to \$500 travel reimbursement.

Please note that submitting this application form does not guarantee reimbursement.

You will be notified within two weeks of receipt of this application whether or not it has been approved.

Date _____		
Institution _____		
Department _____		
Address _____		
City _____	State _____	Zip Code _____
<i>Application Prepared by (required):</i>		
Name _____	Title _____	
Phone _____	Fax _____	
Email _____		

Please list information on the speakers below and indicate if speakers' dates or talk titles are tentative.

Date _____		
Institution _____		
Department _____		
Address _____		
City _____	State _____	Zip Code _____
<i>Application Prepared by (required):</i>		
Name _____	Title _____	
Phone _____	Fax _____	
Email _____		

Date _____		
Institution _____		
Department _____		
Address _____		
City _____	State _____	Zip Code _____
<i>Application Prepared by (required):</i>		
Name _____	Title _____	
Phone _____	Fax _____	
Email _____		

WOMEN SPEAKERS LIST (WSL)

ENROLLMENT/MODIFICATION FORM

Additions/Modifications may also be made on the Internet at www.aps.org/programs/women/speakers/enroll.cfm
 An online copy of the WSL is also available. The *Women Speakers List* is compiled by the American Physical Society Committee on the Status of Women in Physics (CSWP). The list is updated continuously online. Comments, questions and entries should be addressed to:
Women Speakers List • APS • One Physics Ellipse • College Park, MD 20740-3844 • (301) 209-3232

To enroll or update your current entry, please complete this form and return it to the address above. Please print clearly or type.

Title/Name Dr. Prof. Mrs. Ms. _____ Date _____

Institution _____ Telephone _____

Address _____ Fax _____

_____ Email _____

City _____ State _____ Zip Code _____

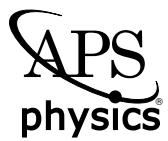
If you have moved out of state, list previous state: _____

New Entry Modification

For which audiences are you willing to speak? (Check all that apply) Middle school High school General Colloquium

To register a new title, give the title as you want it to appear in the left column below. Then check the section(s) where it is to be inserted. To delete a title, indicate the title and check the appropriate box below. A limit of four total entries will be imposed. You may use additional pages if you are submitting more than four modifications. Please type or print legibly paying particular attention to formulas. We regret that we are unable to include illegible entries.

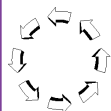
TALK TITLE	PHYSICS SUBFIELD (LIMIT 4)		
1 . <input type="checkbox"/> Add this title <input type="checkbox"/> Delete this title	<input type="checkbox"/> Accelerators <input type="checkbox"/> Astrophysics <input type="checkbox"/> Atomic/Molecular <input type="checkbox"/> Biological/Medical <input type="checkbox"/> Chemical <input type="checkbox"/> Computational <input type="checkbox"/> Condensed Matter <input type="checkbox"/> Diversity	<input type="checkbox"/> Education <input type="checkbox"/> Fluid Dynamics <input type="checkbox"/> General <input type="checkbox"/> Geophysics/ Environmental/Energy <input type="checkbox"/> History <input type="checkbox"/> Interface/Device <input type="checkbox"/> Materials	<input type="checkbox"/> Nuclear <input type="checkbox"/> Optics/Optical <input type="checkbox"/> Particle <input type="checkbox"/> Physics & Society <input type="checkbox"/> Plasma <input type="checkbox"/> Polymer <input type="checkbox"/> Statistical/Nonlinear <input type="checkbox"/> Other
2 . <input type="checkbox"/> Add this title <input type="checkbox"/> Delete this title	<input type="checkbox"/> Accelerators <input type="checkbox"/> Astrophysics <input type="checkbox"/> Atomic/Molecular <input type="checkbox"/> Biological/Medical <input type="checkbox"/> Chemical <input type="checkbox"/> Computational <input type="checkbox"/> Condensed Matter <input type="checkbox"/> Diversity	<input type="checkbox"/> Education <input type="checkbox"/> Fluid Dynamics <input type="checkbox"/> General <input type="checkbox"/> Geophysics/ Environmental/Energy <input type="checkbox"/> History <input type="checkbox"/> Interface/Device <input type="checkbox"/> Materials	<input type="checkbox"/> Nuclear <input type="checkbox"/> Optics/Optical <input type="checkbox"/> Particle <input type="checkbox"/> Physics & Society <input type="checkbox"/> Plasma <input type="checkbox"/> Polymer <input type="checkbox"/> Statistical/Nonlinear <input type="checkbox"/> Other
3 . <input type="checkbox"/> Add this title <input type="checkbox"/> Delete this title	<input type="checkbox"/> Accelerators <input type="checkbox"/> Astrophysics <input type="checkbox"/> Atomic/Molecular <input type="checkbox"/> Biological/Medical <input type="checkbox"/> Chemical <input type="checkbox"/> Computational <input type="checkbox"/> Condensed Matter <input type="checkbox"/> Diversity	<input type="checkbox"/> Education <input type="checkbox"/> Fluid Dynamics <input type="checkbox"/> General <input type="checkbox"/> Geophysics/ Environmental/Energy <input type="checkbox"/> History <input type="checkbox"/> Interface/Device <input type="checkbox"/> Materials	<input type="checkbox"/> Nuclear <input type="checkbox"/> Optics/Optical <input type="checkbox"/> Particle <input type="checkbox"/> Physics & Society <input type="checkbox"/> Plasma <input type="checkbox"/> Polymer <input type="checkbox"/> Statistical/Nonlinear <input type="checkbox"/> Other
4 . <input type="checkbox"/> Add this title <input type="checkbox"/> Delete this title	<input type="checkbox"/> Accelerators <input type="checkbox"/> Astrophysics <input type="checkbox"/> Atomic/Molecular <input type="checkbox"/> Biological/Medical <input type="checkbox"/> Chemical <input type="checkbox"/> Computational <input type="checkbox"/> Condensed Matter <input type="checkbox"/> Diversity	<input type="checkbox"/> Education <input type="checkbox"/> Fluid Dynamics <input type="checkbox"/> General <input type="checkbox"/> Geophysics/ Environmental/Energy <input type="checkbox"/> History <input type="checkbox"/> Interface/Device <input type="checkbox"/> Materials	<input type="checkbox"/> Nuclear <input type="checkbox"/> Optics/Optical <input type="checkbox"/> Particle <input type="checkbox"/> Physics & Society <input type="checkbox"/> Plasma <input type="checkbox"/> Polymer <input type="checkbox"/> Statistical/Nonlinear <input type="checkbox"/> Other



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