

## GPS (Grants, Programs, and Support Networks) For Postdoctoral and Early Career Researchers



### A Roundtable of Representatives from Federal Agencies and Professional Societies

Committee on Women in Science, Engineering, and Medicine  
November 4, 2010  
Washington, DC

This roundtable -- attended by more than 50 participants -- focused on programs that address the needs of postdoctoral and early career researchers and was designed to provide an opportunity for a discussion of this topic across a diverse variety of organizations and a full range of disciplines in science and engineering. The roundtable included a panel of representatives from professional societies that gave a brief overview of their programmatic efforts to support researchers and relevant data, followed by a presentation on how professional societies collect data on female faculty of color in their membership. The roles of academic institutions and organizations that represent them were also explored, and several representatives from federal agencies provided summaries of the types of support available to early career researchers. The discussants during the roundtable focused on how collectively early career researchers can be better supported and how to facilitate the dissemination of promising practices and relevant data on an ongoing basis.

#### ***Session I: How do Professional Societies Engage their Postdoctoral and Early Career Researchers?***

**Jennifer Diascro** spoke on behalf of the American Political Science Association (APSA), highlighting three key trends faced by female postdoctoral researchers: (1) in recent years, women have had higher success rates in gaining tenure and being promoted than men; yet, more women join academia as “All But Dissertation” (ABD) researchers and spend the initial years of their academic careers in completing their dissertation; (2) the field suffers from a leaky pipeline with almost half of women junior faculty opting out of the field before becoming full professors; and (3) women are more likely than men to take positions at institutions that are not research intensive, opting for temporary faculty positions and then leaving academia. APSA has been addressing these issues by initiating mentoring programs and building relevant and up-to-date databases through surveys of women in junior faculty positions and of women of color at all levels.

**Adam Fagen** introduced the American Society of Plant Biologists (ASPB) as an international 5,000-member society of geneticists, biochemists, cell biologists, and other researchers in similar fields. ASPB supports postdoctoral researchers through career workshops and networking events, laboratory leadership workshops that focus on issues for early-career researchers and late-stage postdoctoral researchers, and academic awards targeted at early career and recent graduates. Speaking on diversity

and gender, Fagen noted that academic awards have typically tilted toward men and noted that ASPB is now trying to expand the applicant pool by introducing a user-friendly application system, which should diversify the pool. Fagen mentioned that ASPB supports services such as on-site childcare with subsidized fees at its annual meetings.

**Leslie Hartten** represented the 10,000-member American Meteorological Society (AMS), describing the field as a well connected small group with members from academia and private sector. Hartten addressed the subject of diversity by noting the variety of educational backgrounds of researchers in meteorology. As indicated in a 2005 survey<sup>1</sup>, about 30 percent of AMS respondents had doctoral degrees, 23 percent were students, and the rest had master's or bachelor's degrees. AMS has been involved in promoting diversity at the undergraduate level through awards, scholarships, and mentoring programs.

**Jessica Kohout** of the American Psychological Association (APA) reviewed the association's programs on postdoctoral and early-career researchers, including grants aimed at young researchers from diverse backgrounds, awards for early career contributions, and annual summer institutes and outreach programs for students. The Committee on Early Career Psychologists advises the state divisions of the APA on conducting activities and regular surveys to improve its programs. Recent survey results reaffirmed an upward trend in the number of postdoctoral researchers in the field and showed that women have a substantial representation in the field (women make up 73 percent of recent postdoctoral researchers). However, some other trends should be noted: (a) more women tend to opt for more poorly funded research areas, and (b) men and women entering the field do not enjoy the career growth that researchers did a few decades ago as the result of a growing contingent faculty pool.

**Sam Rankin** discussed the American Mathematical Society's (AMS) efforts toward supporting postdoctoral researchers. One such program is the Mathematics Research Communities. Started in 2008, the program aims to connect doctoral students with recent graduates through organized meetings for these researchers. He noted that such networking activities promote a cohort system and provide mentorship opportunities to students early in their careers which are particularly important for retaining females and underrepresented minorities in mathematics. AMS provides financial support in the form of travel funds to encourage and support students to attend such events.

**Roberta Spalter-Roth**, who represented the American Sociological Association (ASA), emphasized the association's extensive data on students and researchers in the field. ASA, in collaboration with the National Science Foundation (NSF), has initiated a postdoctoral program to promote collaborative research (e.g., economics and sociology) to evaluate the impact of building interdisciplinary cohorts of researchers and the intentional mentoring of them. Spalter-Roth spoke of gender-focused programs at ASA that primarily are research on work-family

issues. She noted the trend in sociology for more women to opt for postdoctoral research than men.

**Betsy Bizot** addressed the recent trends in computer science and computer engineering, as tracked by the Computing Research Association (CRA). She compared data from 2000 and 2009, noting that the two fields experienced a 400 percent increase in the number of students opting for postdoctoral research, while the number of doctorates doubled from 874 in 2000 to 1,747 in 2009<sup>2</sup>. Bizot discussed a new program, Computing Innovation Fellows, which was started in light of limited career opportunities. The program tracks the career progression of fellows vis-à-vis the careers of researchers who do not participate and may highlight important trends that the impact of research opportunities has on career patterns of recent doctorates. Bizot discussed CRA's women-focused programs, including career mentorship, workshops, and graduate cohort-building programs, which aim to build a support network that focuses on career development.

**Cathee Johnson Phillips** shared the National Postdoctoral Association (NPA)'s survey findings on recent trends in postdoctoral research. Results of NPA's 2004-2005 survey<sup>3</sup> indicate that 60 percent of postdocs are international students; one-third are in their early-30s, and they are working on average 51 hours per week. Further, more women were domestic U.S. citizens compared to men (many of whom did postdoctoral research on temporary visas). The same survey noted that only 7.5 percent of doctoral students in science, technology, engineering, and mathematics were non-Caucasian. Many of those surveyed had children. When comparing the impact of having children for postdoctoral women and men, three major gender-based differences emerged: (1) women delayed starting a family for their careers; (2) women spent more time on childcare than men; and (3) women were more likely to have a working spouse, which is likely to be linked to the previous point on childcare. Phillips underscored the need to shift the policy focus to career advancement issues. *Science & Engineering Indicators* has shown an upward trend for women in postdoctoral research, but there are still fewer women than men in the entire cohort.

During the discussion session following these presentations, participants raised questions regarding the role of professional societies in supporting the careers of postdoctoral researchers. Phillips' point on the imbalance in the number of dependents for women and men in postdoctoral research was further discussed in light of visa restrictions for spouses of researchers on temporary visas. A question posed to the speakers was on the resistance in their organizations to launching special programs focused on women and minorities. Participants raised the need to consider the impact of family responsibilities and dual careers while selecting candidates for early career awards. The discussion noted recent trends, including the unionization of some postdoctoral researchers and the

---

<sup>1</sup> Hartten, Leslie M., "Encouraging Young Scientists in the American Meteorological Society" <<http://sites.nationalacademies.org/PGA/cwsem/052273/PGA>> as of December 14, 2010.

---

<sup>2</sup> "Introduction to CRA's Programmatic Efforts" by Betsy Bizot: "Computing Research Association, Postdoctoral and Early Career Researchers, CWSEM Nov 2010" <[http://sites.nationalacademies.org/PGA/cwsem/PGA\\_052273](http://sites.nationalacademies.org/PGA/cwsem/PGA_052273)>, as of December 14, 2010.

<sup>3</sup> Sigma Xi 2004-2005 Postdoc Survey.

tendency of research labs to utilize postdoctoral researchers in lieu of more expensive full-time employees.

### ***Session II: Data Collection by Professional Societies on Women Faculty of Color***

**Lisa Frehill** and **Rachel Ivie** described the data tools used by professional societies to track the career progressions of postdoctoral researchers in their organizations. They emphasized the need for collecting comparable data across departments, the importance of training staff on processing data, and the potential impact such data could have on providing input for relevant federal policies. In recent surveys on researchers, women were found to hold less than 50 percent of faculty positions and even fewer full professorships, although discipline differences for male-female composition exist.<sup>4</sup>

Based on this presentation, participants raised issues as to whether low response rates and non-comparability of data across departments and societies could impact survey results. Also discussed were inherent problems in surveys, including unclear definitions of race and ethnicity. Finally, to promote transparency and standardization of surveys, participants discussed the value of a common web portal for data and the need for training workshops for societies.

### ***Session III: Postdoctoral and Early Career Research Programs at Academic Institutions and their Impact on Women***

**Claire Van Ummersen** spoke on behalf of the American Council on Education (ACE), which represents more than 1,800 colleges and universities. She shared some of ACE's findings on gender in academia, including: (a) the impact of the leaky pipeline, which has resulted in institutions implementing programs to promote women who continue in academia, and (b) the importance of leadership in organizations and their role in providing commitment to programs that address the retention and advancement of female faculty. Ummersen discussed a cost-benefit analysis that showed that the cost for the recruitment and training of new researchers exceeds the cost of providing childcare support services for the men and women with children who are already employed.

**Beverly Karplus Hartline** represented the University of the District of Columbia, which is a historically Black university. Hartline discussed the university's role in encouraging students interested in applying for advanced degrees via professional development programs and grant writing workshops. Hartline also talked about her work as a member of the working group for women in the International Union of Pure and Applied Physics. She noted that the working group has focused particularly on building a multi-national network of women and on organizing training and professional development workshops.

Ummersen and Hartline concluded their remarks by emphasizing the need to encourage women to "ask" for their rights as early-career researchers. One participant remarked that the lack of a strategy in attracting women in science and engineering is an important reason for the poor gender ratio in the field. Ummersen also answered a question on the salary differences among doctors because of flexible hour policies; such policies may discourage women from raising families. This session concluded with a discussion on how academic institutions should try to improve their policies to better support women and minorities and that a more encouraging work environment will help all researchers.

### ***Session IV: Federal Agencies' Programs for Postdoctoral and Early Career Researchers***

**Fae Korsmo** represented NSF and talked about the foundation's focus on providing equal opportunities. Korsmo described five major initiatives within NSF's programs for postdoctoral researchers: (1) making regular research grants available; (2) providing mentoring plans under the America Competes Act; (3) creating integrative opportunities for women, minorities, and people with disabilities; (4) improving the education and training programs for researchers as a High Priority Performance Goal (HPPG); and (5) focusing on building effective evaluation and assessment systems at the postdoctoral level to help in program assessment.

**Rebecca Keiser** discussed the National Aeronautics and Space Administration (NASA)'s programs in supporting postdoctoral researchers. NASA Postdoctoral Fellows work in a variety of research areas. Since 2005, NASA has selected 574 fellows, of which 27 percent are female. Of these women, 59 percent are U.S. citizens but only 20 percent are minorities; of the men joining as fellows, 24 percent are minorities. Upon completion of the fellowship program, most fellows continue their research at a university or another NASA center. Keiser noted that early career hires, although encouraged, are fewer because of low attrition rates, and this low hiring rate also reduces the number of female external hires.

**Laura Bacon**, White House Fellow at the U.S. Department of Energy (DOE), introduced two programs undertaken by DOE: (1) Workforce Development of Teachers & Students (WDTs), which aims at providing a variety of opportunities to students at all levels of education as well as to teachers; and (2) Clean Energy, Education, Empowerment (C3E) Initiative, which aims at broadening the scope of a clean energy research by involving underrepresented groups. The C3E initiative promotes interaction and collaboration among students through fellowships, scholarships and exchanges, and programs across a variety of institutions at the domestic and international levels.

**David Thomassen** introduced the recent activities undertaken by DOE to support early career researchers. He spoke of the Office of Science's Early Career Research Program and Science Graduate Fellowships. The Early Career Research Program was recently launched with the aim to provide researchers with fewer than 10 years' experience the opportunity to focus on their areas of

---

<sup>4</sup> National Science Foundation, Division of Science Resources Statistics. 2009. *Characteristics of Doctoral Scientists and Engineers in the United States: 2006*. Detailed Statistical Tables NSF 09-317. Arlington, VA. Available at <http://www.nsf.gov/statistics/nsf09317/>

interest. The graduate fellowships provide financial support to early career researchers by funding their living, travel, and tuition expenses, for a total of \$50,500 annually.

**Roger Beachy**, director of the National Institute of Food and Agriculture (NIFA), discussed the institute's focus on capacity building programs and competitive grants, such as the National Needs Graduate and Postgraduate Fellowship (NNF) Grants Program. In awarding these grants, NIFA aims to cover a wide breadth of research areas. Beachy discussed the diverse representation of land-ownership in the agriculture sector which, he urged, needs to be reflected in the background of researchers. By establishing this linkage, Beachy emphasized the importance of attracting students from minority groups through institutions such as the Tribal Colleges and Universities and Hispanic-Serving Institutions (HSIs). He shared NIFA's recent efforts to attract researchers in agriculture through specific Predoctoral and Postdoctoral Fellowship Grants.

**Walter Schaffer** and **Vivian Pinn** spoke on behalf of the National Institutes of Health (NIH). Pinn talked about some of the family-focused policies introduced at NIH to support young researchers managing dual careers. NIH has conducted workshops and programs, e.g., aimed at making the work environment more family-friendly. Topics discussed in these programs included methods of disseminating best practices and mentoring programs for women. Schaffer discussed NIH's efforts for postdoctoral researchers and expressed concern about the increasing median age of faculty.

**Jong-on Hahm** and **Malathi Srivatsan** presented information on NSF's awards and programs to promote postdoctoral researchers -- particularly women. As an

indicator of a gender gap, Hahm shared figures from the prestigious Career Awards. Out of the 425 awards granted in the past 10-15 years, 75 percent had been awarded to men. However, Hahm pointed out that proposals by white women have the highest success rate for Career Awards funding of any race/ethnicity/gender category. In light of these inconsistencies at the postdoctoral research level and beyond, NSF has introduced a number of programs, including the ADVANCE Institutional Transformation program which provides a systematic approach to academic institutional change.

Discussion focused on the impact of NSF's Broader Impact Criterion and on the absence of family-friendly components, including childcare support in postdoctoral proposals. Federal agency representatives talked about their constraints in acting as role models. For instance, NASA encourages its researchers to reach out to K-12 students but does not have a dedicated program for this.

The meeting concluded with a discussion of some recurring themes from the presentations including:

- The impact that the lack of a cohort can have on individual researchers;
- The problem of the leaky pipeline;
- Issues of re-entry into research careers; and
- The lack of support for postdoctoral researchers to explore alternative career options.

The roundtable discussion reaffirmed that the challenges confronting postdoctoral and early career researchers exist across disciplines, institutions, and federal agencies. It also underscored the need for further exploration of these commonalities and how to successfully disseminate proven models and practices.

---

## About CWSEM

The Committee on Women in Science, Engineering, and Medicine (CWSEM) is a standing committee of the National Research Council (NRC). Its mandate is to coordinate, monitor, and advocate actions to increase the participation of women in science, engineering, and medicine. Established in 1990 as CWSE, the committee expanded its scope in 2007 to include medicine. The committee collects and disseminates information on the education and employment of women scientists and engineers, and recommends ways to enhance women's advancement. CWSEM activities include an agenda of study projects; disseminating data on the Internet and at professional meetings; serving as an information resource for the national media; and as a liaison to other organizations. Since its inception, CWSEM has published several reports and convened national conferences on women in science and engineering academic programs; women scientists and engineers in industry; and minority women in science, engineering, and the healthcare professions.

*This meeting recap was prepared by National Academies staff as an informal record of issues discussed during public sessions of the November 4, 2010 meeting of the Committee on Women in Science, Engineering, and Medicine (CWSEM). The document is for information purposes only and supplements the meeting agenda available online at [www.nas.edu/cwsem](http://www.nas.edu/cwsem). It has not been reviewed and should not be cited or quoted, as the views expressed do not necessarily reflect the views of the National Academies or members of CWSEM.*

For more information about CWSEM visit our web site at <http://www.nas.edu/cwsem>  
500 Fifth Street, N.W., Washington, D.C. 20001  
[cwsem@nas.edu](mailto:cwsem@nas.edu) 202.334.1737