

## ADVANCES & INSIGHTS: *The NIH Women in Science Newsletter*

This e-newsletter is brought to you by the NIH Working Group on Women in Biomedical Careers.



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### Recent Research and Perspectives

#### Addressing disparities in academic medicine: Moving forward

Byington, C. L., & Lee, V. (2015). *Journal of the American Medical Association*, 314, 1139–1141.

<http://www.ncbi.nlm.nih.gov/pubmed/26372582>

In medicine and science, the potential of women has not been fully borne out. Compared to men, women are paid less and are less likely to advance to the highest ranks of medicine. The authors introduce two studies (summarized below) in a recent issue of *JAMA* that present new data on women's status in academic medical careers and address some of the underlying reasons for gender disparities in the field. They go on to stress the importance of addressing these problems by acknowledging the existence of gender bias, instituting transparency in hiring, and revising the promotion and tenure processes.

#### Sex differences in academic rank in U.S. medical schools in 2014\*

Jena, A. B., Khullar, D., Ho, O., Olenski, A. R., & Blumenthal, D. M. (2015). *Journal of the American Medical Association*, 314, 1149–1158.

<http://www.ncbi.nlm.nih.gov/pubmed/26372584>

The researchers examined data on faculty rank within two biomedical research programs for junior investigators. Among 90,000 physicians at academic medical centers, women were less likely than men to be full professors (11.9% versus 28.6%), and this effect persisted even after adjustment for age and years since residency. The women were also less productive: They had fewer publications

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Sex differences in academic rank in U.S. medical schools in 2014

Sex differences in institutional support for junior biomedical researchers

Why is John more likely to become a department chair than Jennifer?

than men, were less likely to have NIH funding, and were less likely to have conducted a clinical trial. Even among the faculty with NIH funding—who may be more likely to be on a research track—there were similar gender differences in senior faculty rank.

### Sex differences in institutional support for junior biomedical researchers\*

Sege, R., Nykiel-Bub, L., & Selk, S. (2015). *Journal of the American Medical Association*, 314, 1175–1176.

<http://www.ncbi.nlm.nih.gov/pubmed/26372589>

In an analysis of start-up packages of 127 men and 92 women applying for grant support from the Medical Foundation Division of Health Resources in Action, the median start-up packages for men in basic science were 67 percent greater than those of women (\$889,000 vs. \$350,000), even though both genders had similar degrees and came from similar institutions. The results point to the need for a systematic examination of gender differences in institutional support and its association with career advancement.

### Why is John more likely to become a department chair than Jennifer?

Carnes, M., Bartels, C. M., Isaac, C., Kaatz, A., & Kolehmainen, C. (2015). *Transactions of the American Clinical and Climatological Association*, 126, 197–214.

<http://www.ncbi.nlm.nih.gov/pubmed/26330674>



In this review, the authors outline research on the effects of gender stereotypes on career advancement for physicians and scientists. They cover research on subtle differences in written evaluations of male and female medical students; the influence of cultural assumptions of gender-specific behavior on medical residents’

experiences as leaders; and how remedial approaches to improving gender bias among academic and medical faculty can successfully change behavior and institutional culture.

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\*The Institute of Medicine Report “Exploring the Biological Contributions of Human Health: Does Sex Matter?”, and thus The NIH Office of Research on Women’s Health, refers to sex as a biological classification and gender as a socially constructed role. These articles define these terms differently than the Institute of Medicine definitions.

## Spotlights

### Scientist Spotlight: Dr. Kjersten Bunker Whittington



*Dr. Kjersten Bunker Whittington*

Dr. Whittington is an Associate Professor of Sociology at Reed College, with expertise in the social study of science and the science, technology, engineering, and mathematics (STEM) workforce. Her research examines gender disparities in scientific careers, with an emphasis on women’s collaborative networks in science and their involvement in high-tech entrepreneurship. Dr. Whittington takes an organizational perspective in her research, emphasizing the relationship between gender inequity and workplace organization. She also focuses on the understudied topic of women’s participation in industrial science contexts. Her work has demonstrated how women’s collaborative patterns are dependent on the organizational structure of the workplace and the associated incentives of industrial versus academic science. Dr. Whittington earned an M.A. and a Ph.D. in sociology from Stanford University and a B.S. in physics from North Carolina State University.

In 2014–2015, Dr. Whittington served as a Science & Technology Policy Fellow for the American Association for the Advancement of Science (AAAS). The AAAS fellowship is designed to bring academic scientists with varying backgrounds and experience to federal workspaces to learn and contribute to the science policymaking process. During her fellowship, Dr. Whittington was Special Assistant to Dr. Janine Clayton, Associate Director for Research on Women’s Health in the Office of Research on Women’s Health. Her fellowship work included the development of National Institutes of Health (NIH) policy to enhance consideration of sex as a biological variable in preclinical research ([see recently updated grant guidelines here](#)). She also coordinated intramural and extramural [NIH activities](#) that support women’s careers in the biomedical sciences. Her work in the Office demonstrates how scientists with diverse expertise can come together to provide comprehensive insight on areas where research can inform policy and vice versa.

Dr. Whittington’s work has been funded by a number of organizations, including the National Science Foundation, the National Bureau for Economic Research/Sloan Foundation, and the Association for Institutional Research. She has published widely on these topics and has been highlighted in newspapers and journals, including *Nature*, *The New Yorker*, *The Daily Reporter*, *The Boston Globe*, and *USA Today*. As a woman in science studying women in science, and as a mother of three, Dr. Whittington recognizes the challenges faced by working women and the value of her own mentoring and career opportunities. She strives to give these same opportunities to her students who are interested in science careers, and she advocates for institutional approaches to change. “Many institutional strategies that serve to better support women scientists will also serve to better support *all* workers,” she says. “Women have come a long way in science fields and will continue to do so with sustained research attention to this topic and thoughtful programmatic efforts.”

## Institutional Spotlight: Massachusetts Institute of Technology

The Massachusetts Institute of Technology (MIT) has worked steadily to increase the representation of women in leadership positions over the past 15 years. These efforts have been highly successful, as the number of women faculty members has nearly doubled over this time. There have been far more women in senior positions, serving as academic deans, department heads, and most notably the president of the institute. These visible changes have also trickled down throughout the student pipeline, as graduate and undergraduate groups are steadily approaching gender parity across the university. MIT has made remarkable progress in gender equity by enforcing administrative action on key issues regarding the recruitment and retention of women. Today, MIT's efforts have been replicated by many, and it serves as a model for other universities.

Many of the aforementioned changes came in response to two highly publicized studies performed in 1999 and 2002 that revealed issues facing women faculty members. In these telling reports, women expressed that they were (1) marginalized by their male colleagues, (2) excluded from important decision-making authority, (3) overburdened by family duties, and (4) unequally compensated for their work (i.e., lower salaries, inadequate resources, and insufficient recognition). These reports were taken seriously by the leadership team at MIT; the former Deans of Science and Engineering, Robert Birgeneau and Tom Magnanti, called for immediate fundamental changes in salary and space allocations. Additionally, the institution formed the Council on Faculty Diversity, co-chaired by Provost Robert A. Brown, Professor Wesley Harris, and Nancy Hopkins, which established committees to address many issues, including inequities in compensation and resources, work-life balance, hiring practices, and overall climate. The most notable accomplishments included extending the tenure clock by one year for women who recently had children and educating leaders on unconscious biases in recruitment and hiring schemes. These positive adjustments have considerably improved the perception of women faculty over time, as noted in a follow-up 2011 MIT report.

MIT has also established several programs to assist newly appointed faculty with their transition into research careers. Dr. Michael Sipser, the Dean of Science at MIT, notes that every junior faculty member receives a generous startup, which provides funds to launch their research program, as well as funds for relocation and child-care. The purpose of these large startups is to relieve some of the financial burden placed on new researchers. This added stability encourages both women and men to continue careers in academia. Dr. Sipser is excited to note that after a recent internal survey, suggested by Provost Martin Schmidt, MIT found "no discernable differences" in the average startup amounts between men and women in either the School of Science or the School of Engineering within the last 10 years. This is a welcome change for the institution and a reminder of the progress that MIT has made. To further support new faculty, MIT established the Faculty Housing Assistance Program (FHAP). FHAP provides financial support to new hires that seek to purchase homes in the relatively expensive Boston area. In addition, the Institute has dramatically expanded its child care facilities on campus to accommodate the growing number of faculty and students with children.

While faculty recruitment and retention is essential, MIT recognizes the importance of nurturing the student pipeline. The Women's Technology Program (WTP) brings together high school girls for an intense 4-week summer course in engineering and computer science. The goal of this program is to encourage young women to hone in on their scientific skills by participating in interactive labs and group exercises. The WTP curriculum is unique, because it is designed and taught exclusively by female graduate students at MIT. The women offer hands-on mentorship and guidance to these girls throughout the course of this program. MIT also sponsors the Advantage Testing Foundation's Math Prize for Girls, which recruits hundreds of high school mathletes from around the world to participate in a spirited mathematics competition. Co-advised by two MIT professors, Gigliola Staffilani and Michael Sipser, this event is currently the largest monetary math prize competition for girls. These programs enable MIT to educate and showcase some of the brightest young talents in the world, encouraging girls to pursue their passion in STEM fields.

According to Dr. Sipser, MIT has made substantial progress since the 1999 and 2002 reports. He values these studies, because they brought awareness to many of the problems that had been embedded in the culture. As a result of these evaluations, MIT was able to execute targeted strategies to address these issues. While this is true, Dr. Sipser acknowledges that there is still a lot of work to be done. He challenges all employers, department heads, and institutional leaders to take the appropriate steps to monitor gender equity and overall climate at their institutions. “You have to have leaders who are sensitive to these concerns, wise, and involved,” says Dr. Sipser. MIT is trying to create an inclusive environment where *all* faculty members feel valued and adequately equipped to perform excellent work. Dr. Sipser believes that “our increased diversity makes MIT a better place to work and a more vibrant intellectual community.”

## **NIH Spotlight: Q&A with Hannah A. Valantine, M.D.**

Hannah Valantine, M.D. is the first NIH Chief Officer for Scientific Workforce Diversity and a Senior Investigator in the Intramural Research Program at the National Heart, Lung, and Blood Institute, where she oversees a multisite consortium of mid-Atlantic transplant centers to develop noninvasive genomic tools for detecting early signs of heart and lung transplant rejection and infection.

### **Q. Can you tell us a little about your background?**

**A.** My life experiences, from my childhood in the Gambia to my time in London at university and medical school as a young cardiologist to my academic career at Stanford, have indelibly shaped my take on the extraordinary value of diversity and the opportunities it brought me and can bring to all of us. We have so much to gain from bringing new voices and experiences to the table.

### **Q. What is your charge at NIH?**

**A.** My office was created and is supported by NIH leadership, with a mandate to lead and coordinate scientific workforce diversity goals and activities across NIH. I have a pretty small staff, but we work very collaboratively with NIH Institutes, Centers, and Offices to promote the value of scientific workforce diversity, and we have several programs and initiatives in place already.

### **Q. Can you tell us about some of those?**

**A.** Yes. Our mission is to enhance diversity of the scientific workforce through evidence-based research. I believe scientific workforce diversity is a scientific issue, one that can and should be solved by a rigorous evidence-based approach.

A few of the specific things we are doing include experimental training awards across the country that are testing recruitment and retention strategies in specific contexts. In the intramural program, we’re trying to expand diversity in applicant pools. We’re currently testing whether education and the provision of tools can overcome the effects of nonconscious bias in hiring by search committees.

### **Q. What about addressing the needs of women in science?**

**A.** Although women make up half the U.S. population and they comprise roughly half of trainees in biomedicine, relatively few women occupy top leadership positions in science and medicine. That is a problem. Many factors contribute, but a big one is the “ideal worker” culture so prominent in research. We’re still faced with an outdated mindset. For the most part, expectations have not changed to meet the needs of the 21st-century two-earner workplace. We need to encourage and endorse the use of flexibility policies. Often they are underused because women fear potential career retribution. This is not just a women’s issue; it’s everyone’s concern, and men need to be part of the solution, too.

**Q. What do you see as challenges for expanding scientific workforce diversity?**

**A.** NIH Director Dr. Francis Collins and I addressed this recently in a [Perspective](#) published in *PNAS*. In that piece, we lay out four key diversity challenges facing the broader biomedical community.

First is the need to expand study on the science of diversity. A lot of data outside biomedicine supports the notion that diverse teams are more innovative and better at problem solving. We need to look closely at this within our own walls. How does diversity benefit science and health?

Second is the need to apply evidence-based approaches to training and persistence in biomedical research, as I mentioned before. We lose a lot of people from underrepresented groups, including women, at the postdoc-to-faculty transition, and we lose more still on the way to top leadership spots. Why is this happening, and what interventions can offset the attrition?

The third challenge is addressing the role of psychosocial factors on workforce diversity. Here, we are talking about things that influence the culture of biomedicine, including bias, stereotype threat, belonging, and other issues for which social science interventions can probably make a big difference. But we need to test them.

Last but not least is sustainability. We need to make workforce diversity stick, and we can do that by linking together successful strategies and programs that we know are effective. One idea I'm really excited about is creating national Hubs of Innovation for scientific workforce diversity that will be enabled by public-private partnerships. This project is just getting underway. Scientific workforce diversity is a shared responsibility among NIH and all its stakeholders, including the private sector. We all stand to gain from having a workforce that looks like America and that delivers excellent science toward improving health and the economy. Our future depends on it.

**Did you know?**

National Research Service Award (NRSA) trainees and fellows may be eligible to receive a stipend for 8 work weeks of parental leave for the adoption or birth of a child. Generally, this is permitted if colleagues in comparable training positions are given the same amount of leave at the grantee institution.

To learn more, visit <http://grants.nih.gov/grants/guide/notice-files/NOT-OD-08-064.html> or [http://grants.nih.gov/grants/policy/nihgps\\_2013/nihgps\\_ch11.htm#\\_Toc271265091](http://grants.nih.gov/grants/policy/nihgps_2013/nihgps_ch11.htm#_Toc271265091).

## Current News and Reports

### **New NIH division director shares plans for the future**

Written by Rachel Bernstein for [Science Careers](#) on September 2, 2015

Biologist Kay Lund, Ph.D. has been hired as the inaugural director of the NIH Division of Biomedical Research Workforce Programs, which was recently created to address concerns about diminishing academic job prospects and funding to junior researchers in the United States. In this interview, Dr. Lund describes her journey to the position, the colleagues she will work with, her hopes for the division's accomplishments, and her short- and long-term goals for promoting a diverse and productive workforce.

### **Advancing Postdoc Women Guidebook**

Edited by Belinda Lee Huang for the [National Postdoctoral Association](#)

This free online resource from the National Postdoctoral Association is the product of a New Scholars grant from the Elsevier Foundation. The guidebook, produced over three years, evaluates promising practices of professional societies and associations to advance the careers of postdoctoral women. It also addresses advice on finding good mentors, career preparation and planning, post-graduate school life, and taking advantage of resources for work–life balance and child care for postdoctoral women.

### **Young women empowering their communities: Championing change**

Written by Katharine Gallogly for the [White House](#) on September 17, 2015

In September, the White House honored 11 young women from diverse backgrounds for their work to inspire and lead others in their communities, and it also released a fact sheet about implicit bias and inclusion of women and minorities in science, technology, engineering, and math (STEM) education. Before the event, the honorees shared some of their reflections.