

Women in Biomedical Careers



NIH **U**pdates on Women in Science News for Yo**U** to Use!

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NIH Updates on Women in Science is brought to you by the [NIH Working Group on Women in Biomedical Careers](#). We encourage you to share this e-newsletter with colleagues who may find it of interest.

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The National Science Foundation Releases Initial Data on Graduate School Enrollment from Annual Survey

The National Science Foundation (NSF) recently released its annual report on the demographics of graduate students and postdoctoral fellows in science at U.S universities. This data comes from the Survey of Graduate Students and Postdoctorates in Science and Engineering, which was revised in 2007 to improve reporting. The initial report of 2007 data indicated that while 44% of all graduate students were women, 48% of U.S. citizens and 34% of foreign students were women. While in general, graduate student enrollment increased in 2007 over 2006 by 3.8%, the rate of growth for women slightly exceeded that of men both for U.S. citizens and foreign nationals. Complete analysis of the survey, including data on postdoctoral fellows, will be available in a forthcoming report.

[S&E Graduate Enrollments Accelerate in 2007; Enrollments of Foreign Students Reach New High](#)

The American Society for Cell Biology Releases “Career Advice for Life Scientists Volume III”

The American Society for Cell Biology (ACSB) recently released the third installment in a series of handbooks for life scientists, “Career Advice for Life Scientists” which can be downloaded from the ACSB website. Volume III, following Volumes I & II which were released together in 2008, contains a collection of articles from the Women in Cell Biology column in the monthly *ACSB Newsletter*. The compilation and editing of the book were funded by the NIH Office of Research on Women’s Health and the Burroughs Wellcome Fund. The articles cover topics including academic careers, alternative careers such as law and science writing, communication, scientific citizenship, postdoc and graduate student issues, and balancing career and family both as a parent and a manager. It also addresses issues specific to women and underrepresented minority scientists.

[Download or Order Career Advice for Life Scientists](#)

[Links to ASCB on the Women in Science Web site](#)

Research Shows that Differences in Stereotypes Predict Differences in Achievement

Results of study in which the gaps in science and math achievement between boys and girls in 34 countries was compared to results of a test of unconscious bias was published in the June 30 edition of the Proceedings of the National Academy of Sciences (PNAS). Project Implicit, hosted by Harvard University, is a virtual laboratory providing access to Implicit Association Tests (IAT) which allow users to better understand their own unconscious biases about a number of issues including religion, age, skin-tone, and gender-career. The paper compared the results of the 2003 Trends in International Math and Science Study (TIMSS), which tested the math and science proficiency of eighth graders in

34 countries, to the results of tests taken at the Project Implicit website between 2002 and 2008. Lead authors Brian A. Nosek, Ph.D., along with 24 co-authors from 14 countries, used regression analysis to show that results of the gender-science stereotyping IAT (which associates men with math or science and women with liberal arts) for a given nation predict the disparity in math and science achievement between boys and girls in that country. The authors proposed that if gender stereotypes and sex gaps in achievement are self-reinforcing in a given country, then national programs addressing both simultaneously may be effective in closing the achievement gap.

[National differences in gender–science stereotypes predict national sex differences in science and math achievement \(PNAS\)](#)

[Project Implicit](#)

Preliminary Study Finds Gender Gap in Teens Interested in Computing as a Career

The Association for Computing Machinery (ACM) and the WGBH Educational Foundation have undertaken an initiative to improve the perception of high school students of computing as a career and to increase the number of college students choosing to major in computer science. The group is placing a special emphasis on the perceptions held by women and underrepresented minorities. As part of the first phase of this project, which is funded by the NSF, the group conducted a nationwide online survey of college-bound 13-17 year olds asking about potential college majors, potential career choices, the relative importance of different aspects of careers, and their level of comfort with technology. Analysis of the surveys revealed that over 70% of college-bound boys, regardless of race/ethnicity, rated computer science as a good or very good choice of major or career for them. For college-bound girls, the overall rankings were lower and there was a difference in perception between girls of different ethnicities. About 38% of African American and Hispanic girls rated computer science or computing as a good or very good choice of major or career, but only 29% of white girls rated computer science as a good or very good major and 25% rated computing as a good or very good career.

[Study Confirms Low Interest among Girls, High Interest among College-bound African American and Hispanic Teens \(ACM\)](#)

Reports Outline Obstacles and Solutions for Women and Minorities in Technology

The Anita Borg Institute for Women and Technology recently released a report entitled, “Obstacles and Solutions for Underrepresented Minorities in Technology” which outlines the current demographics of minority technology workers, results of survey on their perceptions of success and work values, and policies for retaining and advancing underrepresented minority men and women. Last year, the Anita Borg Institute, along with the Michelle B. Clayman Institute for Gender Research, released a companion report focusing on women, “Climbing the Technical Ladder: Obstacles and

Solutions for Mid-level Women in Technology.” Both reports highlight the need for companies to understand the social dynamics experienced by women and minorities and provide diverse pathways for advancement that do not exclude them based on their background and family-balance issues. Professional development opportunities and mentoring along with increased diversity in hiring teams and management, are important for retaining and advancing minority workers in technology fields. Flexibility in work schedules, availability of telecommuting, as well as opportunities for part-time positions and off-ramping/on-ramping, were found to be important to all technology workers but were rated as particularly important by women of color.

[Obstacles and Solutions for Underrepresented Minorities in Technology \(Anita Borg Institute\)](#)

[The Tech Industries Diversity Problem \(Wall Street Journal\)](#)

Highlighting Best Practices – University of Texas M. D. Anderson Cancer Center

The M.D. Anderson Cancer Center, part of the University of Texas system, has instituted a number of programs to support its women scientists. Besides expressing a commitment to nominating women faculty for prestigious internal and external awards and hosting women scientists and physicians to give scientific and women-in-science talks, the Women Faculty Program also highlights women faculty members on its website and hosts an annual reception to recognize promotion and tenure of women faculty at M. D. Anderson Cancer Center. The program’s mission statement states that it aims to “be the model for cancer centers in the effective recruitment, retention and advancement of a diverse faculty of women by creating an institutional culture where women physicians and scientists choose to be.” It supports the Women Leading the Way Lecture Series, which brings high profile women scientists and physicians to present institution-wide scientific and women-in-science lectures, and the Margaret L. Kripke Legend Award which recognizes an individual, woman or man, who has made significant contributions to the advancement of women in cancer medicine and science. In 2008, *Legends and Legacies: Personal Journeys of Women Physicians and Scientists at M. D. Anderson Cancer Center*, edited by Elizabeth L. Travis, Ph.D., was released. This elegant hard cover book features the inspirational stories of 26 accomplished women physicians and scientists.

[Women Faculty Programs at the University of Texas M. D. Anderson Cancer Center](#)

[Legends and Legacies: Personal journeys of women physicians and scientists at M. D. Anderson Cancer Center](#)

[Margaret L. Kripke Legend Award](#)

Women Scientists in Action – Jennifer Stine Elam, Ph.D.

Jennifer Stine Elam, Ph.D., Managing Director of the Center for Women's Infectious Disease Research (cWIDR) at Washington University School of Medicine in St. Louis, Missouri is this month's featured successful junior woman scientist. As cWIDR Managing Director, Dr. Elam is helping to develop interdisciplinary research programs, collaborations, activities, and community outreach around the study of infectious diseases that affect women and their families. Over the past year, she has also been working closely with the NIH Office of Research on Women's Health in their long range strategic planning effort, playing a critical role in organizing the first conference in the series of regional scientific workshops "Moving Into the Future: New Dimensions and Strategies for Women's Health Research" held March 4-6, 2009 in St. Louis.

Dr. Elam became interested in the intersection of women's health and infectious disease as a postdoctoral fellow in Dr. Scott J. Hultgren's laboratory at Washington University, which focuses on elucidating the molecular mechanisms of microbial pathogenesis, especially in urinary tract infection (UTI). A biochemist and macromolecular X-ray crystallographer by training, Dr. Elam's research focused on understanding the detailed structural mechanisms of the assembly and regulation of extracellular amyloid fibers produced by *E. coli*. These fibers, called curli, share molecular properties with other amyloidogenic proteins that cause disorders such as Alzheimer's and Parkinson's disease and play an important role in bacteria's response to environmental stress and in their ability to evade host defenses in UTIs.

Dr. Elam received B.A. degrees in Biochemistry and English from Rice University in 1998. While at Rice, she studied homologous DNA recombination by RecA in the laboratory of Dr. Scott F. Singleton. As a graduate student in the laboratory of Dr. P. John Hart at the University of Texas Health Science Center in San Antonio, Texas, Dr. Elam went on to study how point mutations in the protein copper-zinc superoxide dismutase cause familial amyotrophic lateral sclerosis, the inherited form of Lou Gehrig's disease. She was awarded her Ph.D. in Biochemistry in May 2004. Her dissertation work sparked Dr. Elam's interest in the molecular structure of amyloid proteins and the steps leading to amyloid fiber formation and led her to Dr. Hultgren's laboratory for her postdoctoral training.

Throughout her time as a postdoc, Dr. Elam was heavily involved in authorship and writing for fellowships and research grants, both for her training and for a variety of other research projects in the lab. She enjoyed working with scientists and clinical fellows from diverse backgrounds and areas of expertise to get at larger research questions that bring together the power of basic science and the direct study of disease in the patient. These broader interests led Dr. Elam to develop the position of Managing Director with Dr. Hultgren as the cWIDR was being created.

The cWIDR was established at Washington University in St. Louis in 2008 under Director, Scott J. Hultgren, Ph.D. as the first research center in the world specifically focused on studying the impact of sex and gender on the etiology and susceptibility to diseases caused by microbial pathogens. A combination of newly recruited investigators and existing research groups from several disciplines and departments collaborate in the Center to study the microbial pathogenesis of diseases including: urinary tract infection, sexually transmitted diseases, infections that lead to complications in pregnancy, involvement of biofilms in the establishment and persistence of microbial diseases, cancers associated with infective agents, such as cervical cancer, the importance of infections in other diseases

including neurodegenerative disorders and heart disease, and the application of new computational and genomic techniques to the study of these diseases. The cWIDR was founded on the belief that a cross-discipline, translational approach will be critical to fully understand and treat these often intractable diseases and infections.

In her role as Managing Director of the cWIDR, Dr. Elam wears many hats. In the last year, in addition to leading efforts on the “Moving Into the Future...” conference, the cWIDR Opening Symposium, and the writing of four research grants, she has worked with the cWIDR Director to develop the Center’s strategic plan, solicited membership from over 40 established faculty, supported the recruitment of 2 young molecular microbiology faculty to the Center, networked with potential donors and corporate sponsors, developed promotional materials, and established connections with research and advocacy groups at the university and in the community. Of her many roles, Dr. Elam says, “I view my job as facilitating the great science in women’s health and infectious disease that goes on at Washington University. I try to help individual and groups of faculty in any way I can to propose and acquire funding for more interdisciplinary, collaborative projects that can aid in our understanding of health and disease and make a difference in the lives of women and their families. In this position, I have a unique opportunity to capitalize on my strengths as both a scientist and a writer and to be a part of the science and discoveries of many PIs.”

cWIDR Director, Dr. Hultgren says of Dr. Elam, “Her energy, ability to connect and communicate with scientists and non-scientists alike, and leadership have made a huge difference in the success of our growing Center and what we have been able to accomplish this first year. She is vital part of the cWIDR team.” Dr. Elam adds, “It is really exciting to be involved in the very beginnings of this effort and to see the growing impact the cWIDR is making scientifically, on women’s health, and in the community. I am honored to be a part of it.”

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