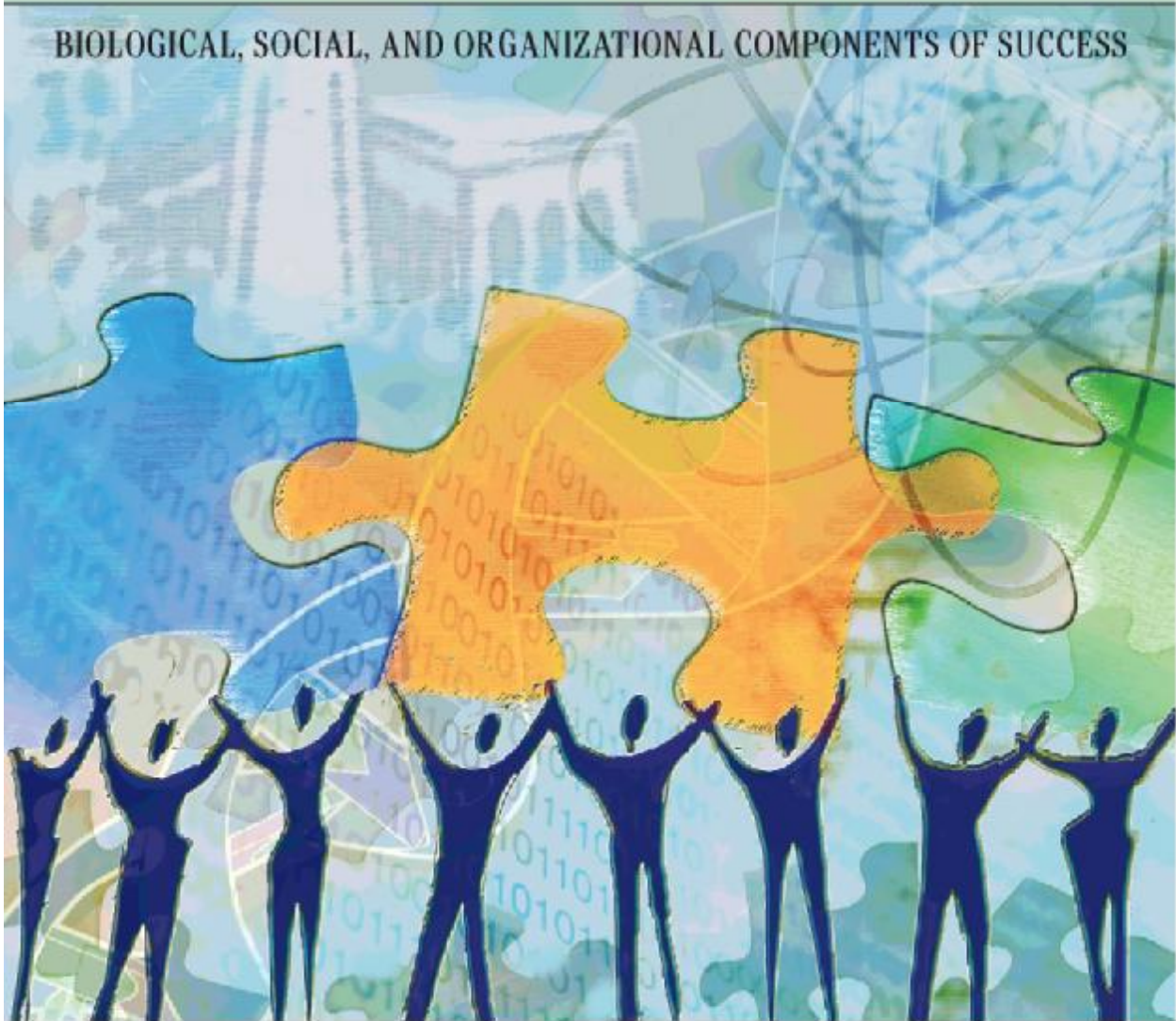


THE NATIONAL ACADEMIES  
*Advisers to the Nation on Science, Engineering, and Medicine*

COMMITTEE ON SCIENCE, ENGINEERING, AND PUBLIC POLICY

# CONVOCATION ON MAXIMIZING THE POTENTIAL OF WOMEN IN ACADEMIC SCIENCE AND ENGINEERING

BIOLOGICAL, SOCIAL, AND ORGANIZATIONAL COMPONENTS OF SUCCESS



MEETING PROGRAM AND ABSTRACTS

## WELCOME

Welcome to the National Academies' Convocation on Maximizing the Potential of Women in Academic Science and Engineering: Biological, Social, and Organizational Components of Success.

This Convocation will explore the impact of sex and gender on recruiting, hiring, promotion, and retention of academic science and engineering faculty. The committee has brought together researchers from multiple disciplines to discuss the current state of research, promising research directions, and to identify effective practices and structural models, policies, and procedures that could help maximize the potential of science and engineering researchers. What does sex differences research tell us about behavior, capability, career decisions and achievement? What roles do organizational structures and institutional policies play? How can we bring forth the cross-cutting issues of diversity within the population of women? What are the key research needs, experimental paradigms, and tools? What are the ramifications of this research for policy, particularly for evaluating current and potential academic faculty?

The convocation consists of three elements:

- § A series of panel discussions.
- § Poster sessions where attendees can share their experiences.
- § A public comment session.

The discussions during these activities will help the committee respond to its charge. We encourage you to fully participate in the convocation and we look forward to hearing your ideas.

We thank the National Academies and the National Institutes of Health Office of Research on Women's Health for their support.

### **Committee on Maximizing the Potential of Women in Academic Science and Engineering**

**DONNA SHALALA** [IOM] (*Chair*) President, University of Miami

**ALICE M. AGOGINO** [NAE] Roscoe and Elizabeth Hughes Professor of Mechanical Engineering, UC Berkeley

**LOTTE BAILYN** Professor, Sloan School of Management, MIT

**ROBERT J. BIRGENEAU** [NAS] Chancellor, UC Berkeley

**CATHERINE D. DEANGELIS** [IOM] Editor-in-Chief, The Journal of the American Medical Association

**ANA MARI CAUCE** Executive Vice Provost and Earl R. Carlson Professor of Psychology, University of Washington.

**DENICE DENTON** Chancellor, UC Santa Cruz

**BARBARA GROSZ** Professor of Computer Science, Harvard University.

**JO HANDELSMAN** HHMI Professor, Department of Plant Pathology, UW Madison.

**NAN KEOHANE** President Emerita, Duke University

**SHIRLEY MALCOM** [NAS] Head, Directorate for Education and Human Resources Programs, AAAS

**GERALDINE RICHMOND** Richard M. and Patricia H. Noyes Professor, Department of Chemistry, University of Oregon.

**ALICE M. RIVLIN** Senior Fellow, Brookings Institution.

**RUTH SIMMONS** President, Brown University

**ELIZABETH SPELKE** [NAS] Professor of Psychology, Harvard University.

**JOAN STEITZ** [NAS] Sterling Professor of Molecular Biophysics and Biochemistry, Yale University School of Medicine

**ELAINE WEYUKER** [NAE] Fellow, AT&T Labs

**MARIA T. ZUBER** [NAS] E. A. Griswold Professor of Geophysics, MIT

## **ABOUT THE COMMITTEE ON MAXIMIZING THE POTENTIAL OF WOMEN IN ACADEMIC SCIENCE AND ENGINEERING**

The National Academies—under the aegis of the Committee on Science, Engineering, and Public Policy—has launched a study to examine how funding organizations, academic institutions, and faculty can best maximize the potential of women in science and engineering.

### **Charge to the Committee**

Research in science and engineering has been and remains central to the US role in the world, the culture of the nation, its continuing economic development, and its security. It is imperative that the nation access its entire talent pool. However, it is clear from several recent studies that while women are an increasing proportion of those earning undergraduate and graduate degrees in science and engineering fields, they have not been hired into academic positions commensurate with this increasing representation. Ultimately, this means that the academic research enterprise is missing out on talent, and will under perform relative to its potential.

The study committee will integrate the data available on gender issues across all fields of science and engineering. The committee will focus on academe, but will examine other research sectors to determine if there are effective practices in place relevant to recruiting, hiring, promotion, and retention of women science and engineering researchers.

The committee is charged to:

- (1) Review and assess the research on gender issues in science and engineering, including innate differences in cognition, implicit bias, and faculty diversity.
- (2) Examine the institutional culture and practices in academic institutions that contribute to and discourage talented individuals from realizing their full potential as scientists and engineers.
- (3) Determine effective practices to ensure women doctorates have access to a wide range of career opportunities, in academe and in other research settings.
- (4) Determine effective practices on recruiting and retention of women scientists and engineers in faculty positions.
- (5) Develop findings and provide recommendations based on these data and other information the committee gathers to guide the following groups on how to maximize the potential of women science and engineering researchers:
  - (a) Faculty: roles in hiring, promotion, retention, and mentoring
  - (b) Deans and Department Chairs: roles in hiring and promotion and equitable provision of resources
  - (c) Academic Leadership: roles in hiring, promotion, resource allocation, tracking, and setting the tone for institutional culture
  - (d) Funding Organizations: roles in education and training, compensation levels, review, and tracking of grant applicant and recipient data.
  - (e) Government: roles in enhancing and diversifying access to education, training, and research funding, and in ensuring that data about program users are collected and available for assessment purposes.

### **For More Information**

Website: [www7.nationalacademies.org/womeninacademe](http://www7.nationalacademies.org/womeninacademe)

E-mail: [women\\_academe@nas.edu](mailto:women_academe@nas.edu)

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## CONVOCATION GUIDELINES

**This event will be open to the public so individuals from other organizations, affiliates of local academic institutions, and members of the press may be in attendance and you may be quoted. In addition, we will be taping the event so that we may publish a meeting summary. In registering for this event, you gave your permission to include your remarks in the publication.**

**Questions:** We expect over 200 attendees at the convocation. So that everyone has a chance to ask their questions and provide their comments, we ask that you use the aisle microphones and limit your time at the microphone to one minute. A timing device will be used to ensure we are fair to everyone. When you ask a question or make a comment please state your name and affiliation.

**Lunch:** Box lunches with vegetarian, tuna, turkey, or roast beef sandwiches will be available free-of-charge in the Great Hall directly outside the auditorium.

**Posters:** Posters will be set up in the Great Hall. Authors will be present during lunch to discuss findings.

**Cell phones:** Please either turn off cell phones or place on “vibrate” mode. Messages can be left at (202) 334-1613.

**The National Academies**  
**Committee on Science, Engineering, and Public Policy**

**Committee on Maximizing the Potential of Women in Academe**  
**CONVOCATION ON BIOLOGICAL, SOCIAL, AND ORGANIZATIONAL**  
**CONTRIBUTIONS TO SCIENCE AND ENGINEERING SUCCESS**

**December 9, 2005**

**National Academy of Science Building**  
**2101 Constitution Avenue, NW**  
**Washington, DC**

**AGENDA**

**9:00 Welcome**

**Bill Wulf, President, National Academy of Engineering**

**9:05 Keynote: *Factors that Determine Success in Science and Engineering Careers***

**Donna Shalala [IOM], Chair, Committee on Maximizing the Potential of Women in Academe**

**9:45 Plenary Discussion 1: *Cognitive and Biological Contributions***

**Moderator: Ana Mari Cauce, member, Committee on Maximizing the Potential of Women in Academe**

- Gender similarities  
**Janet Hyde**, Department of Psychology, University of Wisconsin-Madison
- Sexual dimorphism in the developing brain  
**Jay Giedd**, National Institute of Mental Health, NIH
- Environment-genetic interactions in the adult brain: effects of stress on learning  
**Bruce McEwen [NAS/IOM]**, The Rockefeller University
- Biopsychosocial contributions to cognitive performance  
**Diane Halpern**, Berger Institute for Work, Family, and Children, Claremont McKenna College

**11:15 Break**

**11:30 Plenary Discussion 2: *Social Contributions***

**Moderator: Alice Agogino, member, Committee on Maximizing the Potential of Women in Academe**

- Implicit and explicit gender discrimination  
**Mahzarin Rustum Banaji**, Department of Psychology, Harvard University, and Radcliffe Institute for Advanced Study
- Contextual influences on performance  
**Toni Schmader**, Department of Psychology, University of Arizona
- Interactions between power and gender  
**Susan Fiske**, Department of Psychology, Princeton University
- Social influences on science and engineering career decisions  
**Yu Xie**, Department of Sociology, University of Michigan

**1:00 Lunch Poster Session in the Great Hall**

**2:00 Plenary Discussion 3: *Organizational Structures***

**Moderator:** Lotte Bailyn, member, Committee on Maximizing the Potential of Women in Academe

- Competence assumptions and stereotype-driven evaluations  
**Joan Williams**, Center for WorkLife Law, University of California, Hastings College of the Law
- Economics of gendered distribution of resources in academe  
**Donna Ginther**, Department of Economics, University of Kansas
- The value of work-family policies  
**Robert Drago**, Departments of Labor and Women's Studies, Pennsylvania State University
- Gendered organizations  
**Joanne Martin**, Graduate School of Business, Stanford University

**3:15 Break**

**3:30 Plenary Discussion 4: *Implementing Policies***

**Moderator:** Nan Keohane, member, Committee on Maximizing the Potential of Women in Academe

- Recruitment practices  
**Angelica Stacy**, Department of Chemistry, University of California, Berkeley
- Reaching into minority populations  
**Joan Reede**, Harvard Medical School
- Creating an inclusive work environment  
**Sue Rosser**, Ivan Allen College, Georgia Tech
- Successful practices in industry  
**Kellee Noonan**, Diversity Program Manager, Technical Career Path, Hewlett Packard

**4:45 Plenary Discussion 5: *Open Q&A with Committee***

**5:30 Closing Comments**

**Denice Denton**, Member, Committee on Maximizing the Potential of Women in Academe

**5:45 Reception in Great Hall**

**6:30 Adjourn**

*Copies of the presentations will be available shortly after the Convocation at <http://www7.nationalacademies.org/womeninacademe/Convocation.html>.*

## SELECTED PUBLICATIONS

- Banaji MR** and Greenwald AG (1995). Implicit gender stereotyping in judgments of fame. *Journal of Personality and Social Psychology* 68: 181-198.
- Colbeck C and **Drago R** (2005). Accept, Avoid, Resist: Faculty Members' Responses to Bias Against Caregiving... and How Departments Can Help. *Change: The Magazine of Higher Learning* (Nov-Dec).
- Durston S, Hulshoff Pol HE, Casey BJ, **Giedd JN**, Buitelaar JK, van Engeland H (2001). Anatomical MRI of the developing human brain: what have we learned? *Journal of the American Academy of Child & Adolescent Psychiatry*. 40(9):1012-20.
- Drago R** and Colbeck C (2003). Final Report from the Mapping Project: Exploring the Terrain of U.S. Colleges and Universities for Faculty and Families. <http://lsir.la.psu.edu/workfam/mappingproject.htm>.
- Drago R**, Colbeck C, and Bardoel A (2005). Delayed Career Entry: A New Source of Talent. *Ivey Business Journal* (July-Aug). [http://www.iveybusinessjournal.com/view\\_article.asp?intArticle\\_ID=567](http://www.iveybusinessjournal.com/view_article.asp?intArticle_ID=567)
- Fiske ST** (2001). *Effects of Power on Bias: Power Explains and Maintains Individual, Group, and Societal Disparities*. In A. Y. Lee-Chai & J. A. Bargh (Eds). *The Use and Abuse of Power* (pp. 181-193). Philadelphia: Psychology Press.
- Fiske ST** (1993). Controlling other people: The impact of power on stereotyping. *American Psychologist* 48(6): 621-628.
- Ginther DK** (2001). *Does Science Discriminate against Women? Evidence from Academia: 1973-1997*. Federal Reserve Bank of Atlanta Working Paper 2001-02. <http://people.ku.edu/~dginther/wp0102.pdf>.
- Ginther DK** and Hayes KJ (2003). Gender differences in salary and promotion for faculty in the humanities, 1977-1995. *Journal of Human Resources* 38(1): 34-73.
- Halpern D** (2000). *Sex Differences in Cognitive Abilities* (3<sup>rd</sup> ed.). Mahway, NJ: Erlbaum.
- Halpern D** (2004). A cognitive process taxonomy for sex differences in cognitive abilities. *Current Directions in Psychological Science* 13(4): 135-139.
- Hyde JS** (2005). The gender similarities hypothesis. *American Psychologist*, 60: 581-592.
- Hyde JS**, Fennema E, and Lammon JS (1990). Gender differences in mathematics performance: A meta-analysis. *Psychological Bulletin*, 107(2): 139-155.
- Hyde JS** and Linn MC (1988). Gender differences in verbal ability: A meta-analysis. *Psychological Bulletin*, 104(1):53-69.
- Major B, Quinton WJ, and **Schmader T** (2003). Attributions to discrimination and self-esteem: Impact of group identification and situational ambiguity. *Journal of Experimental Social Psychology*, 39, 220-213.
- Mason MA, **Stacy A**, Goulden M, Hoffman C, Frasch K (2005). University of California Faculty Family Friendly Edge. *An Initiative for Tenure-Track Faculty at the University of California*. <http://ucfamilyedge.berkeley.edu/>
- McEwen BS** (2005). Stressed or stressed out: what is the difference? *Journal of Psychiatry and Neuroscience* 30(5):315-8.
- Molloy E, Blumenthal J, **Giedd JN**, Liu H, Jeffries NO, Zijdenbos A, and Rapoport JL (2001). The relationship between brain morphometry and cognitive abilities in healthy pediatric monozygotic twins. *Neuroimage* 13(6): S447-S447.
- Nosek BA, **Banaji MR**, and Greenwald AG (2002). Math = male, me = female, therefore math ≠ me. *Journal of Personality and Social Psychology* 83(1): 44-59.
- Reede J** (2000). Minority health professions pipeline: developing faculty and practitioners. *Presentation to the 128<sup>th</sup> Meeting of the American Public Health Association*. Boston, MA Nov 12-16 2000
- Romeo RD, Lee SJ, Wang A, and **McEwen BS** (2004). Sex differences in estrogen-induced hippocampal NMDA receptors and forebrain cholinergic activity in adult rats. *Hormones and Behavior*, 46(1): 100-101.
- Rosser SV** (2004). *The Science Glass Ceiling*. New York: Routledge.
- Rosser SV** and Daniels J (2004). Widening paths to success, improving the environment, and moving toward lessons learned from experiences of POWRE and CBL awardees. *Journal of Women and Minorities in Science and Engineering* 10(2): 131-148.
- Schmader T** and Johns M (2003). Convergent evidence that stereotype threat reduces working memory capacity. *Journal of Personality and Social Psychology*, 85, 440-452.
- Taylor S and **Martin J** (2003). *The Academic Marathon: Managing the Academic Career* in JM Darley, MP Zanna, and HL Roediger (Eds.), *The Compleat Academic: A Career Guide*, Second Edition (pp. 368-392) Washington, DC: American Psychological Association Press.
- Williams J** (1999) *Unbending Gender: Why Family and Work Conflict and What To Do About It*. New York: Oxford University Press.
- Williams J** (2003) The social psychology of stereotyping: Using social science to litigate gender discrimination cases and defang the cluelessness defense. *Employee Rights and Employment Policy Journal* 7 (2): 401-458.
- Xie Y** and Shauman KA (2003). *Women in Science: Career Processes and Outcomes*. Cambridge, MA: Harvard University Press.
- Xie Y** and Shauman KA (1998) Sex differences in research productivity: New evidence about an old puzzle. *American Sociological Review* 63: 847-870.

## PANELIST BIOGRAPHICAL INFORMATION

**Mahzarin Banaji** is Richard Clarke Cabot Professor of Social Ethics in the Department of Psychology at Harvard University and Carol K. Pforzheimer Professor at the Radcliffe Institute for Advanced Study. She was born and raised in India, in the town of Secunderabad, where she attended St. Ann's High School. Her B.A. is from Nizam College in Hyderabad and her M.A. in psychology from Osmania University. She received her Ph.D. from Ohio State University (1986), was a postdoctoral fellow at University of Washington, and taught at Yale University from 1986 until 2001 where she was Reuben Post Halleck Professor of Psychology. In 2002 she moved to Harvard University. Banaji studies human thinking and feeling as it unfolds in social context. Her focus is primarily on thinking and feeling systems that operate in implicit or unconscious mode. In particular, she is interested in the unconscious nature of assessments of self and other humans that reflect feelings and knowledge (often unintended) about their social group membership (e.g., age, race/ethnicity, gender, class). From such study of attitudes and beliefs of adults and children, she asks about the social consequences of unintended thought and feeling. Her work relies on cognitive/affective behavioral measures and neuroimaging (fMRI) with which she explores the implications of her work for theories of individual responsibility and social justice. Banaji is a Fellow of the American Association for the Advancement of Science, of the American Psychological Association and of the American Psychological Society. She served as Secretary of the APS, on the Board of Scientific Affairs of the APA, and on the Executive Committee of the Society of Experimental Social Psychology. She has served as Associate Editor of *Psychological Review* and of *Journal of Experimental Social Psychology* and is currently Co-Editor of *Essays in Social Psychology*. She serves on the editorial board of several journals, among them *Psychological Science*, *Psychological Review*, *Journal of Personality and Social Psychology*, and *The DuBois Review*. Banaji was Director of Undergraduate Studies at Yale for several years, chaired APS's Task force on Dissemination of Psychological Science, and served on APA's Committee on the Conduct of Internet Research. Among her awards, she has received Yale's Lex Hixon Prize for Teaching Excellence, a James McKeen Cattell Fund Award, and fellowships from the Guggenheim Foundation, and the Rockefeller Foundation's Bellagio Study Center. In 2000, her work with R. Bhaskar received the Gordon Allport Prize for Intergroup Relations. With Anthony Greenwald and Brian Nosek, she maintains an educational website that has accumulated over 2.5 million completed tasks measuring automatic attitudes and beliefs involving self, other individuals, and social groups. It can be reached at <http://www.implicit.harvard.edu>.

**Robert Drago** is a Professor of Labor Studies and Women's Studies at the Pennsylvania State University. He is also Professorial Fellow at the University of Melbourne and moderates the work/family newsgroup on the internet ([lsir.la.psu.edu/workfam](http://lsir.la.psu.edu/workfam)). He holds a Ph.D. in Economics from the University of Massachusetts at Amherst, and has been a Senior Fulbright Research Scholar. Drago's recent research concerns biases against caregiving in the workplace, working time, the value of work-family policies. He also studies college and university faculty and public policies related to work and family with funding from the Alfred P. Sloan Foundation. Most recently, in conjunction with Jackie Rogers and Theresa Vescio, he completed research on the relative decline of women as intercollegiate coaches, with funding from the NCAA and NACWAA. He is president elect for 2006 of the College and University Work/Family Association, a co-founder of the Take Care Net, the 2001 recipient of the R.I. Downing Fellowship from the University of Melbourne (Australia), serves on the board of the Berger Institute for Work, Family and Children, is a member of the Council on Contemporary Families and the International Association for Feminist Economics, and serves on the advisory board for the Ms. Foundation's *Take Our Daughters and Sons to Work* day. He has published numerous articles in publications such as *Academe*, *American Behavioral Scientist*, *Handbook of Work and Family, Industrial and Labor Relations*, *Journal of Labor Economics*, and *the Monthly Labor Review*.

**Susan T. Fiske** is professor of psychology at Princeton University. She has taught on the faculties of the University of Massachusetts, Amherst, and Carnegie Mellon University. A 1978 Harvard Ph.D., she received an honorary doctorate from the Université Catholique de Louvain, Louvain-la-Neuve, Belgium, in 1995. Her graduate text with Shelley Taylor, *Social Cognition* (1984; 2nd ed., 1991), defined the subfield of how people think about and make sense of other people. Her 2004 text, *Social Beings: A Core Motives Approach to Social Psychology*, describes people's most relevant evolutionary niche as social groups, with core motives (such as belonging) that enable people to adapt. Her research has focused on how people choose between category-based (stereotypic) and individuating impressions of other people, as a function of power and interdependence. Her current research shows that social structure predicts distinct kinds of bias against different groups in society, some more disrespected and others more disliked. Her expert testimony in discrimination cases includes one cited by the U.S. Supreme Court in a 1989 landmark case on gender bias. In 1998, she also testified before President Clinton's Race Initiative Advisory Board. Fiske won the 1991 American Psychological Association Award for Distinguished Contributions to Psychology in the Public Interest, Early Career, in part for the expert testimony. She also won, with Glick, the 1995 Allport Intergroup Relations Award from the Society for the

Psychological Study of Social Issues for work on ambivalent sexism. Among other elected offices, Fiske was president of the American Psychological Society for 2002–2003. She edited, with Daniel Gilbert and Gardner Lindzey, the *Handbook of Social Psychology* (4th ed., 1998) and with Daniel Schacter and Carolyn Zahn-Waxler, the *Annual Review of Psychology* (Vols. 51–60, 2000–2009). She has served on the boards of Scientific Affairs for the American Psychological Association, the American Psychological Society, Annual Reviews Inc., the Social Science Research Council, and the Common School in Amherst.

**Jay Giedd** is the Chief of the Unit on Brain Imaging in the Child Psychiatry Branch at the NIMH. He received his MD from the University of North Dakota in 1986, training in adult psychiatry at the Menninger Foundation in Topeka, KS, and Child and Adolescent Psychiatry training at Duke University in Durham, NC. He is board certified in General, Child and Adolescent, and Geriatric Psychiatry. His research focuses on the relationship between genes, brain, and behavior in healthy development and in neuropsychiatric disorders of childhood onset. His laboratory is conducting longitudinal neuropsychological and brain imaging studies of healthy twins and singletons as well as clinical groups such as Attention-Deficit/Hyperactivity Disorder, Childhood-Onset Schizophrenia, and others. Over the past 10 years they have acquired over 3000 MRI scans making this the largest pediatric neuroimaging project of its kind. The lab also studies sexual dimorphism in the developing brain, especially important in child psychiatry where nearly all disorders have different ages of onsets, prevalence, and symptomatology between boys and girls, by exploring clinical populations which have unusual levels of hormones (e.g. Congenital Adrenal Hyperplasia, Familial Precocious Puberty) or variations in the sex chromosomes (e.g. Klinefelter's Syndrome, XYY, XXY). The lab is also conducting studies of monozygotic and dizygotic twins which are beginning to unravel the relative contributions of genes and environment on a variety of developmental trajectories in the pediatric brain. The group is also involved in the development and application of techniques to analyze brain images and is actively collaborating with other imaging centers throughout the world to advance the image analysis field.

**Donna Ginther** is an Associate Professor of Economics at the University of Kansas. Prior to joining the University of Kansas faculty, she was a research economist and associate policy adviser in the regional group of the Research Department of the Federal Reserve Bank of Atlanta. From 1997 to 2000, she was an assistant professor of economics at Washington University, and from 1995 to 1997 she was an assistant professor of economics at Southern Methodist University. Her major fields of study are scientific labor markets, gender differences in employment outcomes, wage inequality, and children's educational attainments. Ginther has been published in several journals, including the *Journal of the American Statistical Association*, *Journal of Economic Perspectives*, *Demography*, and the *Papers and Proceedings of the American Economic Association*. She is a member of the American Economics Association and the Population Association of America. As of 2006, she is a member of the Board of the Committee on the Status of Women in the Economics Profession of the American Economic Association. A native of Wisconsin, Ginther received her doctorate in economics in 1995, master's degree in economics in 1991, and bachelor of arts in economics in 1987, all from the University of Wisconsin-Madison.

**Diane F. Halpern** is Professor of Psychology and Director of the Berger Institute for Work, Family, and Children at Claremont McKenna College. She is the past-president (2005) of the American Psychological Association. Halpern has won many awards for her teaching and research, including the 2002 Outstanding Professor Award from the Western Psychological Association, the 1999 American Psychological Foundation Award for Distinguished Teaching, 1996 Distinguished Career Award for Contributions to Education given by the American Psychological Association, the California State University's State-Wide Outstanding Professor Award, the Outstanding Alumna Award from the University of Cincinnati, the Silver Medal Award from the Council for the Advancement and Support of Education, the Wang Family Excellence Award, and the G. Stanley Hall Lecture Award from the American Psychological Association. She is the author of many books: *Thought and Knowledge: An Introduction to Critical Thinking*, *Thinking Critically About Critical Thinking* (with Heidi Riggio), *Sex Differences in Cognitive Abilities: Enhancing Thinking Skills in the Sciences and Mathematics*, *Changing College Classrooms*, *Student Outcomes Assessment*, and *States of Mind: American and Post-Soviet Perspectives on Contemporary Issues in Psychology* (coedited with Alexander Voiskounsky). Her most recent book is co-edited with Susan Murphy, entitled *From Work-Family Balance to Work-Family Interaction: Changing the Metaphor*.

**Janet Hyde** is Helen Thompson Woolley Professor of Psychology and Women's Studies at the University of Wisconsin-Madison. She earned her PhD in 1972 from the University of California, Berkeley. She is the author of a textbook for the psychology of women course, entitled *Half the Human Experience: The Psychology of Women*. One line of her research has focused on gender differences in abilities and self-esteem. Another line focuses on women, work, and dual-earner couples. One current research project, the Wisconsin Maternity Leave and Health Project (now called the Wisconsin Study of Families and Work), focuses on working mothers and their children; this research has public policy

implications in the area of parental leave. Another current project, funded by the National Science Foundation, is the Moms & Math (M&M) Project, in which she is studying mothers interacting with their 5th or 7th grade children as they do mathematics homework together. Other research investigates gender differences in the emergence of depression and negative cognitive style in adolescence. She is a fellow of the American Psychological Association and the American Association for the Advancement of Science, and a winner of the Heritage Award from the Society for the Psychology of Women for career contributions to research on the psychology of women and gender.

**Joanne Martin** is the Fred H. Merrill Professor of Organizational Behavior and, by courtesy, Sociology at the Graduate School of Business, Stanford University. Martin received a PhD in Social Psychology from Harvard in 1977 and honorary doctorates from Copenhagen Business School in 2001 and the Vrije University in Amsterdam in 2005. Her current research focuses on gender in organizations, including subtle barriers to advancement for women and how to structure gender equity change programs. She is also known for her research on organizational culture (books include *Cultures in Organizations: Three Perspectives* and *Organizational Culture: Mapping the Terrain*). She was elected to serve on the Board of Governors of the Academy of Management and the Faculty Advisory Board (seven elected members) at Stanford University. She also has been a member of the Board of Directors of C.P.P., Inc., where she was the lead outside director, and the International Advisory Board of the International Center for Research in Organizational Discourse, Strategy, and Change, for the Universities of Melbourne, Sydney, London, and McGill. Martin has received numerous awards, including the Gordon Allport Intergroup Relations Award from the American Psychological Association in 1988 (for a paper with Thomas Pettigrew on barriers to inclusion for African-Americans); the Distinguished Educator Award from the Academy of Management in 2000 (for doctoral education), the Centennial Medal from the Graduate School of Arts and Sciences, Harvard University, for research-based contributions to society, in 2002; and the Distinguished Scholar Career Achievement Award from the National Academy of Management, Organization and Management Theory Division, in 2005.

**Bruce McEwen** [NAS/IOM] is the Alfred E. Mirsky Professor and Head of the Harold and Margaret Milliken Hatch Laboratory of Neuroendocrinology at The Rockefeller University. McEwen graduated Summa Cum Laude in Chemistry from Oberlin College in 1959 and obtained his Ph.D. in Cell Biology in 1964 from The Rockefeller University. He returned to Rockefeller in 1966 to work with the psychologist, Neal Miller, after postdoctoral studies in neurobiology in Sweden and a brief period on the faculty at the University of Minnesota. He was appointed as Professor at Rockefeller in 1981. He is a member of the US National Academy of Sciences, the Institute of Medicine, the American Academy of Arts and Sciences and a Fellow of the New York Academy of Sciences. He served as Dean of Graduate Studies from 1991-3 and as President of the Society for Neuroscience in 1997-98. As a neuroscientist and neuroendocrinologist, McEwen studies environmentally-regulated, variable gene expression in brain mediated by circulating steroid hormones and endogenous neurotransmitters in relation to brain sexual differentiation and the actions of sex, stress and thyroid hormones on the adult brain. His laboratory discovered adrenal steroid receptors in the hippocampus in 1968. His laboratory combines molecular, anatomical, pharmacological, physiological and behavioral methodologies and relates their findings to human clinical information. He is a member of the MacArthur Foundation Research Network on Socioeconomic Status and Health, in which he is helping to reformulate concepts and measurements related to stress and stress hormones in the context of human societies. He is the co-author of a new book with science writer Elizabeth Lasley for a lay audience called *The End of Stress as We Know It* published by the Joseph Henry Press and the Dana Press.

**Kellee Noonan** is a manager for the development of HP technical women worldwide and in that context, is the Diversity Program Manager for the Hewlett Packard Technical Career Path. The program was initiated by the CTO and implemented 2 years ago to shatter the glass ceiling for individual contributor technologists and allow them a non-management career path up to executive levels. The goal of the program is to help HP attract, retain, challenge and engage the world's strongest technical talent at all levels of the company. Noonan received her MS in Mechanical Engineering Design from Stanford University, and her BS in Mechanical Engineering from the University of the Pacific in Stockton, CA. At HP, Noonan has held a variety of positions including R&D engineer, Program Manager for HP Corporate Continuing Engineering Education, Computer Systems Technical Education Manager, and an Organizational Effectiveness Consultant. Prior to HP, Noonan was a Member of Technical Staff at the Jet Propulsion Laboratories in Pasadena, CA.

**Joan Reede** is the Dean for Diversity and Community Partnership at Harvard Medical School where she works to recruit and prepare minority students for jobs in the biomedical professions, and to promote better health care policies for the benefit of minority populations. She is the first African American woman to hold that rank at Harvard Medical School and one of the few African American women to hold a deanship at a medical school in the United States. She earned her BS from Brown in 1977 and her MD from Mt. Sinai School of Medicine in 1980. She completed an

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**Joan C. Williams** is Distinguished Professor of Law and Founding Director of the Center for WorkLife Law at University of California, Hastings College of the Law. A prize-winning author and expert on work/family issues, she is author of *Unbending Gender: Why Family and Work Conflict and What To Do About It* (Oxford University Press, 2000), which won the 2000 Gustavus Myers Outstanding Book Award. She has authored or co-authored four books and over fifty law review articles; her work is reprinted in casebooks on six different subjects; she has given over two hundred speeches and presentations in North and Latin America to groups as diverse as the National Employment Lawyers' Association, the Denver Rotary Club, the American Philosophical Association, and the Modern Language Association, and has lectured at virtually every leading U.S. university. Founding Director of WorkLife Law (WLL), she is also Co-Director of the Project on Attorney Retention. She has played a leading role in documenting workplace bias against mothers. Her "Beyond the Maternal Wall: Relief for Family Caregivers Who are Discriminated against on the Job," 26 *Harvard Women's Law Review* 77 (2003), (co-authored with Nancy Segal), was prominently cited in *Back v. Hastings on Hudson Union Free School District*, 2004 U.S. App. Lexis 6684 (2d Cir. April 7, 2004). She also has played a central role in organizing social scientists to document maternal wall bias, notably in a special issue of the *Journal of Social Issues* (2004), co-edited with Monica Biernat and Faye Crosby, which was awarded the Distinguished Publication Award by the Association for Women in Psychology. Her current work focuses on social psychology, and on how work/family conflict affects families across the social spectrum, with a particular focus on how caregiving issues arise in union arbitrations. For more information visit [www.worklifelaw.org](http://www.worklifelaw.org) and [www.pardc.org](http://www.pardc.org). Williams teaches property as well as courses related to gender, family and employment. She has two children. Her husband is a public interest lawyer specializing in privacy and internet issues.

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## Sociology

### **Policy and Praxis: Advancing Women in Higher Education and Influencing Outcomes**

Florence Bonner and Vernese Edgeh, *Howard University*

Women in all parts of the world experience unequal playing fields in their quest for education, employment, occupational prestige, income and resources in nearly every discipline and field. Women remain heavily concentrated in the service fields in higher education and work. When we find more integration by gender men still occupy the positions with higher prestige, greater income and more resources. This is painfully so in the sciences. For example, in European Union (EU) countries such as Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia, women represent the most students in service disciplines, education (74%), humanities and arts (66%), and health and welfare (72%). Men, on the other hand, comprise 77% of all students in the engineering, manufacturing, and construction fields (European Commission on Education, 2002). In South Africa, women graduates account for only 9% in engineering, 28% in agriculture, 38% in medicine, and 47% in the sciences. The most severe inequalities in South African higher education exist among African women (Government of South Africa, 1997).

In the U.S as in many other countries of Europe, like France and the United Kingdom, women outnumber men in most institutions of higher education (Bonner, 2002), have higher grades upon entry and graduate faster; but men enter with more resources, more confidence (Allen 2005). On average men still outnumber women in most science fields and if they do not in the academy they do in the workplace. For example, data from the U.S Bureau of Labor Statistics (2002) show that although women (14,621,158) outnumbered men (11,577,535) overall in the labor force, men held 2,218,400 positions in computer and mathematical occupations compared to 950,047 for women. Men held 86,343 positions in mathematical science occupations compared to women's 67,663. They dominated the architectural subcategories (2,301,953 men to 357,345 women) and in engineering fields (1,522,655 men to 179,800 women). These gender disparities prevail even in the academy in positions of power and authority; and in key places where mentoring routinely takes place.

We examine this problem within the context of the argument that— the presence of women in the academy in greater number than men, often with higher grades, faster time to graduation and success in graduation rates—women are just fine, it's men who are in trouble. Two questions focus the examination.

- Does a numerical majority in higher education entry and graduation rates constitute gender equality for women and does this numerical majority alone represent institutional change?
- Does an increased acquisition of advanced degrees translate into equity in outcomes such as employment, status, salary or resources?

Data compiled from the sources mentioned reveals that, for women, higher education achievement has not translated into gender equality within the academy or outside of it; rather, it has fueled an illusion and fostered a false premise of overwhelming success. Women still face many challenges inside institutions of higher education and learning as well as entry into nontraditional careers and professions; they have not reached parity with men nor have they surpassed them. Disproving the fallacy and debunking the myth that women have conquered all of the problems (or most) requires examination of at least the two questions above. We examine higher education success and outcomes, such as career choices of women and men; location (status and pay) in the occupational hierarchy and labor force to reflect on the questions in an effort to point to needed policy and support in the academy to remedy rather than exacerbate the conditions. We pay particular attention to African-American women.

### **Successful Academic Women in the Americas: Human and Social Capital Descriptors**

Miguel R. Olivas-Luján<sup>1</sup>, Ann Gregory<sup>2</sup>, John Miller<sup>3</sup>, JoAnn Duffy<sup>3</sup>, Suzy Fox<sup>4</sup>, Terri Lituchy<sup>5</sup>, Silvia Inés Monserrat<sup>6</sup>, Betty Jane Punnett<sup>7</sup>, and Neusa María Bastos F. Santos<sup>8</sup>

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A complex interplay of personal and cultural characteristics enables some women, and not others, to overcome barriers to professional success. High-achieving women may share certain personal characteristics, beliefs, and experiences, regardless of the countries in which they live. However, every individual is socialized within a particular national culture, and may be expected to share certain values and expectations with other members of that culture. The main goal of this research project was to identify similarities and differences across occupations (academic, professional, and managerial) of “successful” women in terms of personality, background and support structures, in various countries.

At the outset of the project, many facets of “success” were considered. For the purposes of this study, it was agreed to operationally define “success” as professional success, specifically “reaching a relatively high level in one’s occupation or profession.” The following criteria were used for participation in the study – private sector managers of managers, academic tenured, full professors or senior university administrators, entrepreneurial women who have owned a business at least three years, government ministers/officials, and legal and medical professionals, as well as engineers.

Surveys and interviews were used to collect data on the following three sets of variables: National/Cultural (Collectivism/Individualism, Power Distance, Uncertainty Avoidance), Personal (Self-efficacy, Locus of Control, Need for Achievement), and Social-Experiential (Psychosocial and Career Mentoring). National/Cultural variables were measured using Dorfman & Howell’s (1988) scales inspired by three of Hofstede’s (1980) work dimensions. To measure personal variables, we used the following scales: Self efficacy was measured using an instrument developed by Sherer, Maddix, Mercandante, Prentice, Dunn, Jacobs, & Rogers (1982). A work related locus of control scale derived by Spector (1988) from Rotter’s (1960) work was used to measure the extent to which one perceives being in control of events in one’s life. Need for achievement scale was drawn from the Jackson’s (1989) Personality Research Form. Finally, Psychosocial and Career Mentoring was measured with a scale by Tepper, Shaffer, & Tepper (1996).

Over eleven-hundred professionally successful women and 531 undergraduate business students completed the above surveys. In addition, researchers completed semi-structured interviews with a minimum of 25 participants in each of the countries. The international team, led by eight researchers from diverse academic perspectives (management, strategy, history, women's studies, human resources, and organization behavior) focused on the following countries or regions: USA, Canada, Mexico, Brazil, Argentina, Chile, and the English-speaking Caribbean.

This presentation will compare the subset of academic women in the sample with other sub-samples from the study. Findings will be discussed in the context of the Convocation.

### **Science is Foundation for Leadership**

Gloria Scott, *Jarvis Christian College*

In academia, science is one of the major “subject matter areas” – humanities, social sciences, science representing the basic educational core of knowledge. Science students must internalize and utilize the “scientific method” which is fundamental. One of the basic reasons that science is required as a part of the educational core, is that the exposure to knowledge acquisition and utilization within a methodology forms a foundation for all intellectual interchange and exploration. As one reviews the data on women leaders in the United States, especially African American women, significant numbers were science majors and worked in teaching, and research. Hundreds of them lead in the broad non-profit sector, in the educational non non-profit sector as well as in the profit sector. They are present as Executive and Volunteer Leaders at local, state

national and international levels. This relationship is essential to communicate inter-generationally to current and future college women to help them understand the professional foundation and implementation that science provides as an occupational area, but to also know that science foundation knowledge and experience provides a complex interplay with creating self assured, high performance leadership ability. Science represents the most important fundamental source of knowledge, analysis, strategy and understanding to facilitate human achievement in organizational frames. The poster presents this relationship as essential and foundational in the production of leaders.

### **Work-Family Policies in Academia as Resources or Rewards**

Roberta Spalter-Roth, *American Sociological Association*

There is a growing broad-based, social movement to ameliorate the time conflict between work and family by increasing the availability of work family-policies to academic faculty. This movement responds to the growing numbers of women PhDs in the sciences and other disciplines, and the failure of these women to attain the highest ranks at research universities. Pressure from this movement has expanded the range of institutions of higher education have begun to offer at least minimal work-family policy options so that women (and men) can reconcile the demands of two “greedy institutions.” Two sorts of arguments are made to bring about change: (1) needs based or resources policy and (2) “best and the brightest” or rewards policy. To test these arguments, we analyze evidence from a survey of sociology PhDs, six years after they obtained their PhDs. We find that academic mothers who use of at least one work-family policy significantly increase their scholarly productivity, in the form of peer-reviewed publications, without increasing their time spent at work. These findings suggest that over-all, work-family policies may be effective in meeting the demands of both greedy institutions. Yet, these policies, including family leave, extending the tenure clock, modified teaching loads, and part-time tenure track positions do not appear to be distributed as resources to all academic mothers with young children. Rather they appear to be distributed as rewards on the basis of the predicted productivity of faculty mothers. Predicted productivity is measured by the prestige of the graduate school attended and the publications completed in graduate school. These findings suggest that chairs and other administrators may be less willing to distribute resources to mothers who are not perceived as the “best and the brightest.” To make these policies more universal, needs-based policies, chairs need to inform themselves about the entitlement to work-family policies, deans need to hold chairs accountable for their distribution, and provosts need to hold deans accountable. The broad-based, multi-organizational social movement supporting work-family policies needs to continue to monitor institutions of higher education.

### **Case Studies from the Female Engineering Professoriate**

Monica Young, *Syracuse University*

This research study focused on a desire to understand the reasons why women enter the engineering profession, as well as how they succeed in this profession and ultimately become members of the engineering professoriate. As a female engineer who changed fields, I had a range of experiences both good and bad that contributed to my decision. I am passionate about my current field, science education, and I wish to recruit more females into science and engineering by working in this field. The goal for this study was to find women who have found success in engineering, and question them about the aspects of their lives that helped them succeed. Two women in academia who hold doctoral degrees in engineering were the cases for this study. The women were selected based on differences in their backgrounds, both academically and personally. Each woman was interviewed extensively to garner information about her experiences in elementary and secondary school, college, graduate school, and life in general. Some of the general themes that emerged throughout these interviews were: how to make science memorable, the role of mentoring, the importance of questioning, and social norms. The women discussed experiences they had throughout their academic career that contributed to their current success as assistant professor and senior administrator. Though much information was gleaned from analyzing the interviews, there is a great deal more to learn from these women. Future research will further question the participants in this study and expand the number of participants.

## Organizational Structure

### **The Role of Informal Organizational Structures on Women in the Health Sciences**

Amber Barnato and Pamela Peele, *University of Pittsburgh*

Women in academic science careers often confront organizational structures developed to foster success among men. While these organizational structures may function well for men, they do not necessarily serve well the objectives of recruiting, hiring, retaining, and promoting the careers of women in science careers. Ample social research documents that women and men differ along many domains including their risk preferences, their career choices, and social interactions. Given this, it should not be surprising that the formal organizational structures developed to promote the success of men in academia are not optimal structures for women. We report on the impact of overlaying of informal organizational structures onto the standard organizational structure of academia on the recruitment, hiring, retention, success, and well-being of professional women in the health sciences. We implemented an informal structure that consisted of a core group of junior women health services research faculty at the University of Pittsburgh. This started with a group of three junior women faculty in 1997. From that group, it has grown to over 20 women in the health sciences across the University, most hired after the implementation of the core group. The informal structures in place provide women with a feeling of belonging and friendship which is an important aspect for the recruiting of new women. There is a robust information exchange over such topics as diverse as childcare resources and contract negotiations that allows women to easily observe the experiences of other women and to avoid common pitfalls facing junior women in health sciences. The core group provides several important functions including the endowment of new members with professional capital. An important development of this informal structure is a snowball effect that has produced several new auxiliary social groups that specialize in a variety of topics such as cooking clubs, book clubs, working mom clubs, etc. Each group is informally attached to the core group of research women and while the groups overlap to some extent, they are closed sets. The result is that as the informal structure evolves and expands, it creates mutations to serve the current needs of women in the health sciences while still preserving the core group. The informal structure has served to recruit, hire, and retain women in the health sciences, an effect that grows with the increasing robustness of the structure itself. Two of the most important elements of the informal structure include the rapid access to information and the championing of each other's work. With a single email request, women can activate the informal group to find necessary information from a nanny to accompany them to a conference so they can present their work to information on how someone negotiated their last contract. By the same mechanism, women in the group seem to have a high propensity to promote the work of others in the group. We are now beginning to apply some qualitative methods to investigate what the core elements are that allowed this mechanism to be successful when attempts by others to this have failed.

### **How Do Female and Male Faculty Members Construct Job Satisfaction?**

Diana Bilimoria, Susan R. Perry, Xiangfen Liang, Patricia Higgins, Eleanor P. Stoller,  
and Cyrus C. Taylor, *Case Western Reserve University*

In this study we examine how a sample of 248 male and female professors at a Midwestern private research university construct their academic job satisfaction. Our findings indicate that both women and men perceive that their job satisfaction is influenced by the institutional leadership and mentoring they receive, but only as mediated by the two key academic processes of access to internal academic resources (including research-supportive workloads) and internal relational supports from a collegial and inclusive immediate work environment. Gender differences emerged in the strengths of the perceived paths leading to satisfaction: women's job satisfaction derived more from their perceptions of the internal relational supports than the academic resources they received whereas men's job satisfaction resulted equally from their perceptions of internal academic resources and internal relational supports received. Implications for leadership and institutional practices are drawn from the findings.

**A Good Place to do Science: Creating and Sustaining a Productive, Inclusive Work Environment for Female and Male Scientists**

Diana Bilimoria, C. Greer Jordan, and Susan R. Perry, *Case Western Reserve University*

The purpose of our study was to identify and better understand the work environment factors that lead to the development, retention, and advancement of women faculty in a university setting. Thus, we conducted a case study of a top-ranked science department in a Tier 1 research university. The department, whose primary faculty consisted of three female and thirteen male scientists, had achieved a reputation for cooperation, advancement of women, and productive outcomes. Over a six-month period, we collected data using multiple qualitative methods including interviews, direct observation, and archival research. Inductive analysis of this data revealed five overarching factors and 12 sub factors that contributed to the cooperative, inclusive, productive work culture. The five overarching factors include a shared scientific identity; constructive interactions; participative department activities, inclusive department sub-processes and integrative leadership practices. We tapped existing literature to synthesize these factors into a process model of an inclusive, productive work culture. This study integrates several theoretical approaches to creating effective, diverse work groups into one model. Our work also highlights the role of member identity and types of interactions in building inclusive, high performing work groups across demographic differences. The findings also have implications for intervening in groups, departments, or teams as part of efforts to attract and retain a broader range of high quality scientists, including women and minorities.

**An Integrated Coaching and Mentoring Program for University Transformation**

Diana Bilimoria, Margaret M. Hopkins, Deborah A. O'Neil, and Susan R. Perry

*Case Western Reserve University, University of Toledo*

Higher education researchers and university administrators alike are increasingly concerned about the persistent dearth of women faculty, the overall glacial advancement of women, and the existence of a glass ceiling in academic science and engineering fields. The sources of these problems may be traced to individual psychological processes (gender schemas) and systematic institutional barriers, resulting in perceptions of a chilly climate for women scientists and engineers in academia (Sandler and Hall, 1986), the experience of subtle discrimination by women faculty (Blakemore, Switzer, DiLorio and Fairchild, 1997), the slow but steady accumulation of disadvantage over the course of women's academic careers (Valian, 1999), and the flight from academia by women scientists and engineers at every step in the educational pipeline.

Today, leading universities are beginning to undertake comprehensive remedies to address these problematic attitudinal and structural issues. Prominent within the approaches being implemented are a variety of coaching and mentoring initiatives aimed at helping women faculty succeed, particularly in the early and middle stages of their careers, and at helping key upper- and mid-level university leaders (deans and chairs) in changing the culture of their academic units. We believe that the combined focus of short term coaching targeted at empowering personal and professional development together with long term mentoring and sponsorship can help women faculty succeed in academia. Targeted coaching initiatives designed to assist academic decision-makers such as deans and department chairs in understanding their roles in creating inclusive, supportive environments can also help curb the leaky pipeline of faculty women in sciences and engineering. In this report we describe the activities, challenges, and successes of a unique multi-level, integrated coaching and mentoring initiative at our university.

**Up Against the Glass: Gender and Promotion at a Technological University**  
Cheryl Geisler, Deborah Kaminski, Robyn Berkley, and Linda Layne, *Rensselaer Polytechnic Institute*

Despite increasing access to faculty ranks, women faculty members continue to encounter a glass ceiling when it comes to achieving the rank of full professor. At Rensselaer, we have been engaged in a research program aimed at documenting, understanding, and changing such differential patterns of advancement. Our work began with the development of a low-cost metric, the 13+ Club Index that can be used to monitor advancement in institutions and organizations. The 13+ Club Index examines the ratio between the percentage of women are 13 or more year past degree and have not yet been promoted to full professor and the percentage of men in the same situation. If the women and men at an institution in the 13+ Club are being promoted at the same rate, this index will be 1.

Our first project showed how this index can be used to monitor and change patterns of differential advancement. In particular, a study of the promotion patterns at Rensselaer completed in 2002 showed that women with thirteen or more years since highest degree were 2.2 times than men more likely to remain unpromoted to the rank of full professor. Subsequent to the distribution of the results of this study, numerous changes, both institutional and individual, took place. As a consequence, by the time of our next analysis, two and one-half years later, five of the eleven women who had not been promoted in the original analysis had gone up for and received promotion. Overall, the rate of promotion for women at Rensselaer was more than three times the rate for men and the number of women full professors on the faculty doubled.

Our second project sought to understand the processes underlying differential patterns of advancement. A stratified sample of associate and full professors matched by school and gender were surveyed. Based on this data, we developed six profiles, and found that the distribution of men and women over these profiles was quite distinct. First, looking just at those who had been promoted to full professor, we found that women were more likely to fit Profile III (promoted to full after denial and with no advice or encouragement), while men were more likely to fit either Profile I or II (promoted on first try). Second, looking at those who had not been promoted, we found men were more likely to fit Profile IV (not seeking a promotion to full despite advice and encouragement), while women were more likely to fit Profile V (not seeking promotion nor were they advised or encouraged). Finally, we broke down the entire sample in the 13+ group based on advice and encouragement and found eight of eleven males were advised and/or encouraged to go up for promotion, however, only four of twelve women were so advised.

Our research suggests three forces combine to challenge institutions working to improve women's advancement. To begin with, it appears that whenever the climate at an institution improves with respect to advancement, men will benefit as well as women. Inequities between men and women can thus remain despite improvements in women's situations. Next, pipeline issues are notoriously difficult to ameliorate. While it may be possible to reduce the rate of non-promotion among women relatively quickly, reducing the flow of the pipeline into the ranks of the non-promoted may be a longer-term project. And finally, achieving equity in senior hires is particularly difficult. While processes can be put into place to insure a diverse pool of applicants, the pool of available women applicants at the senior rank is still limited.

### **Women in Academic Physics and Astronomy**

Rachel Ivie, *American Institute of Physics*

One characteristic of the structure of physics and astronomy departments is that the representation of women decreases with each step up the academic ladder. Although women are about half of high school physics students, they make up less than one-fourth of physics bachelor's degree recipients. Women earn about 18% of PhDs in physics, but comprise only 10% of the faculty. At stand-alone astronomy departments, 14% of the faculty members are women, even though women earn 26% of astronomy PhDs. In spite of this apparent leak in the pipeline, our data show that women are represented on physics and astronomy faculties at levels consistent with degree production in the past. In addition, there are only small differences in the dropout rate for male and female physics graduate students. Our data show that there are a few physics departments that have done an outstanding job in recruiting and retaining women faculty and students. There are also serious problems related to the structure of academic employment. For example, women physicists are hired as instructors and adjuncts at rates greater than they are hired into ranked faculty positions. The reasons for this disparity are unknown, but should be investigated.

### **Faculty Horizons: Recruiting a Diverse Faculty**

Mary Ellen Jackson, Phyllis Robinson, Sarah Conolly Hokenmaier, and J. Lynn Zimmer  
*ADVANCE Program, University of Maryland, Baltimore County*

The underrepresentation of women faculty in science, technology, engineering, and mathematics (STEM) fields is a longstanding national problem. A 2005 study shows that female faculty in the top 50 research universities are underrepresented at all ranks, especially as Full Professors. The study also points out that underrepresented minority women “are almost non-existent in science and engineering departments at research universities” and are less likely than Caucasian women or men of any race to be awarded tenure or reach Full Professor status (Nelson and Rogers, 2005). The University of Maryland, Baltimore County (UMBC), a research university committed to excellence and inclusiveness, received an Institutional Transformation Award from the National Science Foundation’s ADVANCE Program to address these issues. As part of this program, UMBC created *Faculty Horizons*, a two-day workshop focused on post-doctoral research fellows and upper level graduate students, particularly women in STEM fields, to provide these future faculty with the knowledge and tools necessary to build a successful career. In recognizing the national problem of the severe shortage of women from underrepresented groups in STEM, special attention is paid to including African American and Hispanic women.

## **Diversity in STEM Disciplines: The Case of Faculty Women of Color**

Delia Saenz and Allecia Reid, *Arizona State University*

Structural, dynamic, and social factors preclude women from equal status, representation, and empowerment in STEM disciplines across the country. The confluence of racial/ethnic minority status and gender, and their concomitant impact, further exacerbate the lack of full participation and recognition of underrepresented women of color in these fields. The presentation will elucidate social psychological factors such as tokenism, stereotypy, and confirmation bias that play a role in inhibiting capacity among women scientists, in general, and women of color scientists, in particular. Research findings from an ongoing cohort study, funded by the Ford Foundation, will be presented. The research involved interviews, focus groups, and web surveys at approximately 20 of the top Ph.D.-producing, public, research extensive universities in our nation. Specifically, the research questions focused on institutional climate as perceived by both women faculty themselves and by institutional officials (provost, general counsel, affirmative action officers). In addition to providing comparative analyses of these varied institutional citizen perspectives, the data include examples of factors, initiatives, and practices that facilitate/inhibit inclusive excellence. The presentation will further identify critical forces at different levels of university functioning (individual, unit, institutional culture) that affect outcomes for STEM faculty. Some of these factors parallel those faced by underrepresented members of the academy across non-STEM disciplinary fields. Other factors appear to be unique to the STEM disciplines. Challenges and opportunities associated with differential levels of institutional diversification will be addressed. Finally, recommendations for 'best practices' that can be implemented at different levels of institutional functioning will be suggested. Among these are strategies that women belonging to both mainstream and minority populations can engage to promote their own success; cultural adaptations that can be implemented within departments and colleges; and policies and procedures, along with leadership imperatives that must be in place to achieve transformational outcomes. A model of interdependence will be invoked to conceptualize the current gaps in the academy, potential interventions (including educational programs for all faculty, staff, and administrators), and identification of critical goals for institutions of higher education, particularly in their role of inspiring knowledge acquisition and dissemination in the service of producing an educated citizenry. The significance of these needed changes stems not only from a current capacity perspective within STEM fields, but also from the reality of the student and workforce pipelines, and from the critical need to ensure national and global technological progress.

## Institutional Policy

### **Initiatives to Increase Recruitment, Retention and Advancement of Women in Science and Engineering Disciplines at Kansas State University** Ruth Dyer and Beth A. Montelone, *Kansas State University*

Kansas State University (K-State) has implemented a number of programs over the last ten years designed to increase the success of women in science and engineering (S&E) disciplines. These programs address issues pertinent to beginning, mid-career, and senior faculty members. One of these is the KSU Mentoring Program for Women and Minorities in the Sciences and Engineering. It has been in existence since 1993, supported by funding from the Sloan Foundation and the K-State Office of the Provost. It is a competitive program that pairs untenured faculty members with mentors in their research areas and provides small awards (up to \$6000) that can be used in a variety of ways. To date, 52 individuals have received awards; ten of these individuals are women of color and five are men of color. The tenure success rate of the 28 individuals who have become eligible for tenure is 79%, higher than the average rate for both men and women in S&E departments and university-wide. 18 of the 22 faculty members receiving tenure are still at K-State, and five women are already full professors. An analysis conducted in 2002 of 31 recipients of the Mentoring Awards indicated that these faculty members had at that time generated over 500 publications, 15 other pieces of intellectual property, and over \$39 million in extramural grant funds.

In 2003, K-State received an ADVANCE Institutional Transformation Award from the National Science Foundation. Our project includes initiatives for individual departments and colleges, as well as project-wide programs, to improve recruitment, retention, and advancement of women in S&E. In the first two years of our project, we have made sixty professional development awards to women faculty members to facilitate their participation in professional conferences, collaboration with colleagues at other institutions, and initiation of research projects. Six tenured women faculty members have received awards to enhance their research activities or undertake administrative projects through interaction with senior mentors. Eighteen untenured women have hosted leaders in their disciplines as part of the ADVANCE Distinguished Lecture Series. Furthermore, twenty men and women faculty members in the College of Veterinary Medicine have established two peer mentoring groups that provide a series of activities to enhance professional development. Departments in the College of Engineering may propose novel strategies for effective recruitment of women; two departments received funding for this purpose in 2004-2005 and successfully hired three women faculty members. Moreover, eight additional women were hired into tenure-track positions in other S&E departments in 2004-2005. This is more than double the average number of women hired in S&E departments over the last six years. Further, six women scientists or engineers have been appointed to administrative positions (Department Head, Associate Dean, Associate Provost) since the start of the project. We believe that these recent hires and administrative appointments reflect an increased commitment to the inclusion and advancement of women in S&E at K-State. We are encouraged by the success of these programs but recognize that continued progress requires constant scrutiny and sustained diligence.

### **Effective Practices for STEM Faculty Diversity**

Lisa Frehill, Mary O'Connell, Elba Serrano, and Cecily Jeser-Cannavale  
*University of California, Irvine and New Mexico State University*

What role do department chairs and deans play in ensuring diversity within academe? This presentation is the culmination of a year of work by a diverse group of 40 deans, department chairs/heads, and senior faculty. After attending conferences with programming about diversity in the professoriate program participants attended a three-day writing retreat. The culmination of this effort are several products on one CD: the Dean's Guide to Diversity, the Department Chair's/Head's Guide to Diversity, and a set of PowerPoint presentation slides that could be used by faculty and academic administrators to convince their peers of the merits of engaging in various "best practices" to increase faculty diversity. While many other excellent guides to diversity have been published, these products feature the "voice" of faculty and academic administrators who have actually implemented and worked with the practices suggested by others. Elements of the publications will be presented on the poster.

### **NSF ADVANCE at the UW-Madison: Three Success Stories**

Jo Handelsman, Molly Carnes, Jennifer Sheridan, Eve Fine, and Christine Pribbenow  
*University of Wisconsin-Madison*

In this poster, we highlight—the hiring process, work/life balance, and departmental climate. We introduce three new initiatives funded by the NSF ADVANCE Institutional Transformation award designed to address these problem areas on the UW-Madison campus. We describe our efforts to raise awareness of how unconscious biases might impact hiring by training chairs of hiring committees; we outline our Life Cycle Research Grant program which provides research funds to faculty who are experiencing a life event that impacts their research productivity; and we outline our workshops for department chairs and the process we use to help them improve the climate in their departments. We present evaluation data indicating the effectiveness of the programs, and show progress of institutionalization and dissemination of the programs.

### **Institutional Transformation at Virginia Tech**

Peggy Layne, Patricia Hyer, and Elizabeth Creamer, *Virginia Tech*

Virginia Tech is one of 19 recipients of a 5-year, \$3.5 million, institutional transformation grant from the National Science Foundation's ADVANCE program to increase the participation and success of women faculty in science and engineering. Now in its third year, AdvanceVT is taking a multifaceted approach to change at Virginia Tech. Activities include preparing women graduate students in science and engineering for faculty careers, working with search committees to help them understand and address unintended bias in the hiring process and to develop diverse candidate pools for faculty positions, providing untenured women faculty with research seed money to help them develop more competitive proposals for external funding, developing leadership skills to enable tenured women faculty to take on leadership roles in the university, building community among women across departments and colleges, raising awareness of gender issues among university leaders, and reviewing, revising, and overseeing implementation of university policies that disproportionately impact women faculty. Throughout the program, AdvanceVT is collecting data on career aspirations and job satisfaction of both male and female faculty at Virginia Tech and tracking statistics on the numbers of women at all levels at the institution. This poster will highlight AdvanceVT program activities, impacts, and plans for sustainability beyond the grant period.

**Institutional Transformation at the University of Michigan**  
Janet Malley, Pamela Raymond, and Abigail Stewart, *University of Michigan*

The NSF ADVANCE Project at the University of Michigan (UM ADVANCE), housed within the Institute for Research on Women and Gender, is a five-year, grant funded project to promote institutional transformation in science and engineering fields by increasing the participation, success, and leadership of women faculty in academic science and engineering.

Initiatives to support individual women scientists and engineers include faculty career advising, research funds, and a network of women scientists and engineers. The Elizabeth C. Crosby and Lydia A. DeWitt Research Funds were established to help meet career-relevant needs of individual instructional track faculty and research track faculty, respectively, if meeting those needs will help increase the retention or promotion of women scientists and engineers. The Network of Women Scientists and Engineers, which is composed of tenure-track women faculty in science and engineering departments across the entire campus, meets several times each year to socialize, to talk about issues the members have in common, and to develop plans for the future. A number of UM ADVANCE activities—many of the leadership development activities, the mentoring initiatives, the annual report to the campus about our progress—have emerged from Network discussions.

UM ADVANCE also provides support to departments aiming to improve their climates through transformation grants, self-studies, and reviews. It encompasses initiatives at all levels of the University, including data-based workshops presented by the Science and Technology Recruiting to Improve Diversity and Excellence Committee (STRIDE) and interactive theater performances by the CRLT Players. More specifically, the STRIDE Committee provides information and advice about practices that will maximize the likelihood that well-qualified female and minority candidates for faculty positions will be identified, and, if selected for offers, recruited, retained, and promoted at the University of Michigan. The committee works with departments by meeting with department chairs, faculty search committees, and other departmental leaders involved with recruitment and retention. The CRLT Players have developed three ADVANCE sketches focusing on mentoring, faculty hiring, and the tenure decision process. These performances are based on faculty interviews and focus groups conducted at the University of Michigan. The performances demonstrate the challenges female faculty may encounter in interactions with other faculty and provide a foundation for dialogue about climate and collegiality.

The President and Provost set in motion a comprehensive review of University policies that affect women scientists and engineers. As co-chairs of the Gender in Science and Engineering Committee (GSE), the President and Provost charged three subcommittees (in turn chaired by three deans), to examine policies in three areas: faculty evaluation and development; recruitment, retention and leadership; and family policies and faculty tracks. This initiative began a process of institutionalizing practices that will be useful for both male and female faculty, while focusing on the policies that research shows affect women more, such as family-related policies, the tenure clock, and the criteria for evaluation and promotion.

### **Scientifically Correct: Speaking to Scientists about Diversity**

Nancy Martin, Beth Mitchneck, and William McCallum, *University of Arizona*

The University of Arizona is currently developing a program to train trainers to orient search committees about scientific research on how unconscious bias can influence the search and hiring processes. This effort is part of a larger National Sciences Foundation ADVANCE proposal (currently under review). Other ADVANCE institutions (University of Michigan, University of Wisconsin at Madison, and others) have used search training and recruitment teams successfully. We extend this by tailoring the orientation materials to specific colleges and developing a cohort of male and female faculty to deliver the message. Our strategy is to reach scientists by sharing the latest and best social science research on unconscious bias. This evidence comes primarily from the field of social psychology, and includes both laboratory and field experiments. Our training provides research evidence of bias on the part of well-intentioned actors. Importantly, unconscious gender bias occurs in both women and men. We provide practical strategies supported by additional research evidence for overcoming the problem of unconscious bias. Also under development are toolkits for interviewing and conducting hiring negotiations.

### **Working to Increase the Success of Women Scientists in Academia**

GL Richmond, *University of Oregon*

As scientists, we leave graduate school with a toolbox full of skills to help us to design and conduct scientific experiments, analyze data, publish papers, and to communicate scientific concepts to others. Unfortunately, this toolbox often does not include skills that enable us to communicate effectively in a variety of professional settings or negotiate for what we need in order to successfully achieve our career goals.

In this poster I describe some of the workshops available to women graduate students, postdocs and faculty around the country that teach such skills. These workshops have been developed by COACH (Committee on the Advancement of Women Chemists) and have been shown to be highly effective in helping women to advance in their careers and reduce the stress in their personal lives (Richmond, 2005) The full day workshops have been designed to (1) enhance communication and negotiation skills needed for effective teaching and career development, (2) teach leadership techniques that are effective for women scientists in an academic setting (3) provide a forum for networking with other academic women scientists and engineers and (4) develop effective strategies for making institutional and departmental change that improves the climate, recruiting and retention of underrepresented groups. Case studies, theatre, role-playing and lively debate contribute to the learning experience for the 15-20 participants in each session. COACH also offers workshops for minority women scientists and engineers that address these above described issues while also providing a forum for discussion of how these methods can be effectively used to address problems of a racial nature that are faced by women in these populations. The workshop facilitators are experienced professional women in human resources, leadership training, teaching, and higher education administration, with extensive experiences in many professional venues.

Over 1000 women scientists and engineers from academic institutions across the country have thus far participated in these workshops. Our research on the impact of these workshops on participants shows that they are significantly enhancing their career progress. New workshops and forums are being launched that are specifically targeted towards institutional transformation. Descriptions of these workshops and information on how to bring them to your professional meeting or institution can be found on the COACH website: <http://coach.uoregon.edu/>.

COACH was formed in 1998 by a group of women professors in the chemical sciences concerned about the slow progress of women in their profession and its impact the ability to attract and retain younger female talent into the field. Details about other COACH activities can be found on the website. COACH is grateful for funding from the National Science Foundation (Chemistry and the ADVANCE program), the National Institutes of Health, and Basic Energy Sciences from the Department of Energy.

### **Leadership Workshops to Effect Cultural Change**

Eve A. Riskin, Kate Quinn, Joyce W. Yen, Sheila Edwards Lange, Suzanne Brainard, Ana Mari Cauce, and Denice D. Denton, *University of Washington, ADVANCE Center for Institutional Change*

Institutional transformation as intended by the NSF ADVANCE program requires a significant amount of change in attitudes, practices and policies throughout the university community. The success of institutional change hinges largely on the extent to which change occurs at the academic department level (Bennett and Figuli, 1990; Lucas, 2000). Yet, academic department chairs are not often prepared to be change agents or administrative managers (Lucas, 2000; Gmelch and Miskin, 1995; Wolverton, Gmelch, Montez, and Nies, 2001). Faculty who have risen to the department chair position are usually recognized leaders in their scholarly fields and have been trained to be scholars, not managers. Most come to the department chair position with little leadership training beyond leading departmental committees (Seagren, Cresswell, and Wheeler, 1993). Department chair orientation and training, if provided, is often once a year and limited to administrative and fiscal responsibilities which represent the tip of the iceberg of a department chair's responsibilities. Often, the more challenging and rewarding experiences of department chairs relate to mentoring faculty and managing their concerns. Gmelch & Miskin found that the responsibilities that chairs rate as most important (i.e. the recruitment and selection of faculty, the evaluation of faculty performance, conflict resolution and leadership) are absent from orientations and campus-based training programs. And while department chairs may seek guidance from online and printed resources targeted at department chairs, such resources are generally not campus-specific enough to be sufficient.

As part of its institutional change efforts, the UW ADVANCE program sought to provide department chairs with on-going opportunities to draw from the experience and wisdom of their department chair colleagues and to conscientiously explore topics relevant to equity in science and engineering and the success of their faculty and departments. Each academic quarter, the CIC hosts a half-day leadership workshop for department chairs, deans, and emerging leaders. These workshops serve as a forum for cross-college networking and professional development for chairs and emerging leaders and are designed to engage academic leaders as critical actors in changing institutional culture. Prior to this program, department chairs received little or no professional development beyond their initial orientation to the department chair position. Evaluations of these workshops have been uniformly high, and department chairs have stated these workshops are the "boot camp" they never got. This poster provides an overview of the quarterly leadership workshop program, offers recommendations for replication, and discusses results from two national workshops modeled after the quarterly workshop program.

### **ADVANCE: Successful Recruitment of Women to STEM at UCI**

Tammy Smecker-Hane, Lisa Frehill, Priscilla, Kehoe, Susan V. Bryant, Herb Killackey and Debra Richardson  
*University of California, Irvine*

The NSF-funded ADVANCE: Institutional Transformation Program at the University of California at Irvine has two significant and lasting innovations related to increasing faculty diversity, which will be covered in the presentation. First, since September 2002 each of the university's ten schools has had at least one "Equity Advisor," who serves as a faculty advisor to the school's dean on issues related to gender equity. Equity Advisors meet with the dean, search committees, department chairs and other faculty in their respective schools to raise awareness and use of more proactive search strategies to increase recruitment of women to the tenure-track faculty ranks. Equity Advisors also run faculty mentoring programs for newly-hired assistant professors. A related innovation is the use of a series of three university forms in the faculty search process that documents the use of proactive strategies and ensures the transparency of search processes. These forms are titled "Search Plan and Advertisement for Regular Ranks Faculty," "Interim Search Activities Statement," and "Final Search Activities Statement." The second of these three forms is new for the 2005-2006 academic year. All three of these forms require an Equity Advisor signature, which increases search transparency and oversight related to equity issues in each search at the UCI.

## COMMITTEE ON MAXIMIZING THE POTENTIAL OF WOMEN IN ACADEMIC SCIENCE AND ENGINEERING

### BIOGRAPHICAL INFORMATION

**DONNA E. SHALALA (CHAIR)** became Professor of Political Science and President of the University of Miami on June 1, 2001. Born in Cleveland, Ohio, President Shalala received her A.B. degree in history from Western College for Women and her Ph.D. degree from The Maxwell School of Citizenship and Public Affairs at Syracuse University. A leading scholar on the political economy of state and local governments, she has also held tenured professorships at Columbia University, the City University of New York (CUNY), and the University of Wisconsin - Madison. She served in the Carter administration as Assistant Secretary for Policy Development and Research at the U.S. Department of Housing and Urban Development. From 1980 to 1987 she served as president of Hunter College of the City University of New York, and from 1987 to 1993 was Chancellor of the University of Wisconsin-Madison. In 1992, *Business Week* named her one of the top five managers in higher education. In 1993 President Clinton appointed her U.S. Secretary of Health and Human Services (HHS) where she served for eight years, becoming the longest serving HHS Secretary in US history. At the beginning of her tenure, HHS had a budget of nearly \$600 billion, which included a wide variety of programs including Social Security, Medicare, Medicaid, Child Care and Head Start, Welfare, the Public Health Service, the National Institutes of Health (NIH), the Centers for Disease Control and Prevention (CDC), and the Food and Drug Administration (FDA). President Shalala has more than three-dozen honorary degrees and a host of other honors, including the 1992 National Public Service Award, and the 1994 *Glamour* magazine Woman of the Year Award. She has been elected to the Council on Foreign Relations; National Academy of Education; the National Academy of Public Administration; the American Academy of Arts and Sciences; the National Academy of Social Insurance; the American Academy of Political and Social Science; and the Institute of Medicine of the National Academy of Sciences.

**ALICE M. AGOGINO** is the Roscoe and Elizabeth Hughes Professor of Mechanical Engineering and affiliated faculty at the University of California, Berkeley Haas School of Business in their Operations and Information Technology Management Group. She directs the Berkeley Expert Systems Technology (BEST) Laboratory and the Berkeley Instructional Technology Studio (BITS). She is currently Vice Chair of the Berkeley Division of the Academic Senate and will serve as Chair during the 2005-2006 academic year. She has served in a number of administrative positions at UC Berkeley including Associate Dean of Engineering and Faculty Assistant to the Executive Vice Chancellor and Provost in Educational Development and Technology. She also served as Director for Synthesis, an NSF-sponsored coalition of eight universities with the goal of reforming undergraduate engineering education, and continues as PI for the NEEDS and the digital libraries of courseware in science, mathematics, engineering and technology. She has supervised 65 MS projects/theses, 26 doctoral dissertations and numerous undergraduate researchers. Agogino is a registered Professional Mechanical Engineer in California and is engaged in a number of collaborative projects with industry. Prior to joining the faculty at UC Berkeley, she worked in industry for Dow Chemical, General Electric and SRI International. Her research interests include intelligent learning systems; information retrieval and data mining; multi-objective and strategic product design; nonlinear optimization; probabilistic modeling; intelligent control and manufacturing; sensor validation, fusion and diagnostics; wireless sensor networks; multimedia and computer-aided design; design databases; design theory and methods; MEMS synthesis and computer-aided design; artificial intelligence and decision and expert systems; and gender equity. She is a member of AAAI, AAAS, ACM, ASEE, ASME, AWIS, IEEE, NAE and SWE. She serves on the editorial board of three professional journals and has provided service on a number of governmental, professional, and industry advisory committees. Agogino received a B.S. in Mechanical Engineering from the University of New Mexico (1975), M.S. degree in Mechanical Engineering (1978) from the University of California at Berkeley and Ph.D. from the Department of Engineering-Economic Systems at Stanford University (1984). She received an NSF Presidential Young Investigator Award in 1985., She is an AAAS Fellow, and a member of the National Academy of Engineering and the European Academy of Science; is a Fellow of the Association of Women in Science; and was awarded the NSF Director's Award for Distinguished Teaching Scholars in 2004.

**LOTTE BAILYN** is a Professor of Management (in the Organization Studies Group) at MIT's Sloan School of Management and Co-Director of the MIT Workplace Center. In her work she has set out the hypothesis that by challenging the assumptions in which current work practices are embedded, it is possible to meet the goals of both business productivity and employees' family and community concerns, and to do so in ways that are equitable for men and women. Her most recent book, *Beyond Work-Family Balance: Advancing Gender Equity and Workplace*

Performance with Rhona Rapoport, Joyce K. Fletcher, and Bettye H. Pruitt (Jossey Bass, 2002) chronicles a decade of experience working with organizations that supports this hypothesis, while also showing how difficult it is to challenge workplace assumptions. She currently serves on the National Academies Committee on Women in Science and Engineering.

**ROBERT J. BIRGENEAU** became the ninth chancellor of the University of California, Berkeley, on Sept. 22, 2004. An internationally distinguished physicist, he is a leader in higher education and is well known for his commitment to diversity and equity in the academic community. Before coming to Berkeley, Birgeneau served four years as president of the University of Toronto. He previously was dean of the School of Science at the Massachusetts Institute of Technology, where he spent 25 years on the faculty. He is a foreign associate of the National Academy of Sciences, has received many awards for teaching and research, and is one of the most cited physicists in the world for his work on the fundamental properties of materials. A Toronto native, Birgeneau received his B.Sc. in mathematics from the University of Toronto in 1963 and his Ph.D. in physics from Yale University in 1966. He served on the faculty of Yale for one year, spent one year at Oxford University, and was a member of the technical staff at Bell Laboratories from 1968 to 1975. He joined the physics faculty at MIT in 1975 and was named chair of the physics department in 1988 and dean of science in 1991. He became the 14th president of the University of Toronto on July 1, 2000. At Berkeley, Birgeneau holds a faculty appointment in the Department of Physics in addition to serving as chancellor.

**ANA MARI CAUCE** is the Executive Vice Provost and Earl R. Carlson Professor of Psychology, University of Washington. She graduated from Yale University, earning a Ph.D. in Psychology in 1984. She began teaching at the University of Washington in 1986 in the Department of Psychology. She also has a joint appointment in the Department of American Ethnic Studies and an adjunct appointment in Women's Studies. Caucé currently holds the Earl R. Carlson Professorship in Psychology and is Chair of the Department of Psychology. Since she began her graduate work, Caucé has been particularly interested in normative and non-normative development in ethnic minority youth and in at-risk youth more generally. She has published almost a hundred articles and chapters and has been recipient of grants from the W.T. Grant Foundation, the National Institute of Mental Health, the National Institute of Child Health and Human Development, and the National Institute of Alcoholism, and Alcohol Abuse. She is the recipient of numerous awards, including Recognition from the American Psychological Association for Excellence in Research on Minority Issues; Distinguished Contribution Awards from the Society for Community Research and Action; and the American Psychological Association Minority Fellowship program. She has also received the University of Washington's Distinguished Teaching Award. Caucé is currently President-Elect of the Society for Community Research and Action.

**CATHERINE D. DEANGELIS** is Editor-in-Chief of The Journal of the American Medical Association, Editor-in-Chief of Scientific Publications and Multimedia Applications, and Professor of Pediatrics, Johns Hopkins University School of Medicine. She received her MD from the University of Pittsburgh's School of Medicine, and her MPH from the Harvard Graduate School of Public Health (Health Services Administration), and her pediatric specialty training at the Johns Hopkins Hospital. Dr. DeAngelis oversees *JAMA* as well as nine *Archives* publications and *JAMA* related Web site content. Before her appointment with *JAMA*, she was vice dean for Academic Affairs and Faculty, Johns Hopkins University School of Medicine, and from 1994-2000, she was editor of *Archives of Pediatrics and Adolescent Medicine*. She also has been a member of numerous journal editorial boards. She has authored or edited 11 books, on Pediatrics and Medical Education and has published more than 200 original articles, chapters, editorials, and abstracts. Most of her recent publications have focused on conflicts of interest in medicine, on women in medicine, and on medical education. Dr. DeAngelis is a council member of the National Academy of Science, Institute of Medicine, a Fellow of the American Association for the Advancement of Science, and has served as an officer of numerous national academic societies including past chairman of the American Board of Pediatrics and Chair of the Pediatric Accreditation Council for Residency Review Committee of the American Council on Graduate Medical Education.

**DENICE DENTON** is currently the Chancellor at the University of California, Santa Cruz, after serving as Dean of and a professor at the University of Washington's College of Engineering since 1996. Prior to her appointment as dean in 1996, she was a faculty member in electrical engineering and chemistry at the University of Wisconsin at Madison. While at the University of Washington, Denton led the development of the Faculty Recruitment Toolkit, a resource for attracting a top notch and diverse faculty. In a single year (2001) nine faculty members received the prestigious NSF Career Award. In addition, federal research funding more than doubled in 3 years (1998-2001), from \$33.1 million in grants and contract awards to more than \$75 million. She also emphasized implementing effective ways to teach a diverse engineering student body using a more project-oriented, experiential approach. This is facilitated by the Center for Engineering Learning and Teaching (CELT), the first center of its kind when established in 1998. She currently directs the University of Washington's NSF ADVANCE program for advancing women faculty in science and

engineering. In 2004 Denton was honored by the White house with the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring, recognizing her role as a national leader in engineering education. Dr. Denton chaired the National Academy of Engineering's Board on Engineering Education from 1996 to 1999. She is a fellow of the American Association for the Advancement of Science, the Association of Women in Science, and the Institute of Electrical & Electronics Engineers (IEEE). Her awards for research and teaching awards include the NSF Presidential Young Investigator Award (1987), the Kiekhofer Distinguished Teaching Award (University of Wisconsin 1990), the American Society of Engineering Education AT&T Foundation Teaching Award (1991), the Eta Kappa Nu C. Holmes MacDonalD Distinguished Young Electrical Engineering Teaching Award (1993), the Benjamin Smith Reynolds Teaching Award (University of Wisconsin 1994), the W.M. Keck Foundation Engineering Teaching Excellence Award (1994), the ASEE George Westinghouse Award (1995), and the IEEE/HP Harriet B. Rigas Award (1995). Dr. Denton earned her B.S., M.S. (1982), and Ph.D. (1987) in electrical engineering at MIT and conducts research on microelectromechanical systems (MEMS) as an enabling technology particularly in life sciences applications.

**BARBARA J. GROSZ** is Higgins Professor of Natural Sciences in the Division of Engineering and Applied Sciences and Dean of Science of the Radcliffe Institute for Advanced Study at Harvard University. Grosz is known for her seminal contributions to the fields of natural-language processing and multi-agent systems. She developed some of the earliest and most influential computer dialogue systems and established the research field of computational modeling of discourse. Her work on models of collaboration helped establish that field of inquiry and provides the framework for several collaborative multi-agent systems and human computer interface systems. She has been elected to the American Philosophical Society and the American Academy of Arts and Sciences. A Fellow of the American Association for Artificial Intelligence, the American Association for the Advancement of Science, and the Association for Computing Machinery; recipient of the UC Berkeley Computer Science and Engineering Distinguished Alumna Award and of awards for distinguished service from major AI societies; Grosz is also widely respected for her contributions to the advancement of women in science. She chaired the Harvard Faculty of Arts and Sciences (FAS) Standing Committee on the Status of Women when it produced the report, "Women in Science at Harvard; Part I: Junior Faculty and Graduate Students" in 1991. She was Interim Associate Dean for Affirmative Action at Harvard in 1993-94 and served on the FAS Ad Hoc Committee on Faculty Diversity from 1998-2001 and the Standing Committee on Women from 1988-95 and again in 1999. Grosz recently chaired the 2005 Harvard Task Force on Women in Science and Engineering. Before joining the faculty at Harvard, she was Director of the Natural Language program at SRI International and co-founder of the Center for the Study of Language and Information. Grosz received an A.B. in Mathematics from Cornell University and a Ph.D. in Computer Science from the University of California, Berkeley.

**JO HANDELSMAN** is an HHMI professor in the Department of Plant Pathology at UW–Madison. She received a B.S. in agronomy from Cornell University and a Ph.D. in molecular biology from UW–Madison. In addition, from 1997 to 1999, she was director of the Institute for Pest and Pathogen Management at UW–Madison. Handelsman studies the communication networks of microbial communities. She has coauthored a book about inquiry-based biology teaching entitled *Biology Brought to Life*. In 2002, she was named Clark Lecturer in Soil Biology and received the Chancellor's University Teaching Award at UW–Madison. In addition, she has been very active in achieving equity for women and minorities on campus, which was recognized with the Cabinet 99 Recognition Award. She contributed to the inception of the Women in Science and Engineering residence hall; has chaired the provost's Climate Working Group, an initiative dedicated to improving the campus climate for women and people of color; and, through a National Science Foundation grant, established, along with others, the Women in Science and Engineering Leadership Institute.

**NANNERL O. KEOHANE** is currently serving as the Laurance S. Rockefeller Distinguished Visiting Professor of Public Affairs at Princeton University. She was the eighth president of Duke University, serving from 1993-2004. Keohane came to Duke from the presidency of Wellesley College. She was the first woman to serve as Duke's president and among the first women to oversee a leading U.S. research university. Under her leadership, Duke launched major programs in fields ranging from genomics to ethics, raised more than \$2 billion through the "Campaign for Duke," established the Duke University Health System and became a much more diverse and international institution. Keohane, the daughter of a Presbyterian minister, was born in Blytheville, Ark., and grew up in Arkansas, Texas and South Carolina. She is a 1961 graduate of Wellesley who earned advanced degrees at Oxford University and Yale University before beginning a career as a professor of political science at Swarthmore College, the University of Pennsylvania and Stanford University. She returned to Wellesley in 1981, serving as its president for 12 years before moving to Duke.

**SHIRLEY MALCOM** is Head of the Directorate for Education and Human Resources Programs of the American Association for the Advancement of Science (AAAS). The directorate includes AAAS programs in education, activities for underrepresented groups, and public understanding of science and technology. Malcom serves on several boards—

including the Howard Heinz Endowment, the H. John Heinz III Center for Science, Economics and the Environment, and the National Park System Advisory Board—and is an honorary trustee of the American Museum of Natural History. She serves as a Regent of Morgan State University and as a trustee of Caltech. In addition she has chaired a number of national committees addressing education reform and access to scientific and technical education, careers and literacy. Dr. Malcom is also a former trustee of the Carnegie Corporation of New York. She is a fellow of the AAAS and the American Academy of Arts and Sciences. She served on the National Science Board, the policymaking body of the National Science Foundation, from 1994 to 1998 and from 1994-2001 served on the President's Committee of Advisors on Science and Technology. Dr. Malcom received her doctorate in ecology from Pennsylvania State University; master's degree in zoology from the University of California, Los Angeles; and bachelor's degree with distinction in zoology from the University of Washington. In addition she holds thirteen honorary degrees. In 2003 Dr. Malcom received the Public Welfare Medal of the National Academy of Sciences, the highest award given by the Academy.

**GERALDINE RICHMOND** is the Richard M. and Patricia H. Noyes Professor in the Department of Chemistry and Materials Science Institute at the University of Oregon. Dr. Richmond received her bachelor's degree in chemistry from Kansas State University and her Ph.D. in chemical physics at the University of California, Berkeley. For the past 25 years her research has focused on the development and application of state-of-the-art lasers to study surface chemistry and physics. On a national level, Professor Richmond has served and continues to serve on many science boards and advisory panels overseeing funding for science, technology, and education. Richmond has been honored with numerous national and regional awards for her research, her teaching, and her efforts in encouraging females of all ages to enter and succeed in science careers. In 2001, she was named Oregon Scientist of the Year by the Oregon Academy of Science. Dr. Richmond is a member of the Chemical Sciences Roundtable of the National Academy of Sciences, and a governor's appointee to the Oregon State Board of Higher Education for 1999-2006. She is the founder and chair of COACH (Committee on the Advancement of Women Chemists) and was the 2005 winner of the ACS Award for Encouraging Women into Careers in the Chemical Sciences.

**ALICE M. RIVLIN** is a Visiting Professor at the Public Policy Institute of Georgetown University and a Senior Fellow in the Economic Studies program at the Brookings Institution. She is the Director of the Greater Washington Research Program at Brookings. Before returning to Brookings, Rivlin served as Vice Chair of the Federal Reserve Board from 1996 to 1999. She was Director of the White House Office of Management and Budget from 1994 to 1996, and Deputy Director (1993-94). She served as Chair of the District of Columbia Financial Management Assistance Authority (1998-2001). Rivlin was the founding Director of the Congressional Budget Office (1975-1983). She was director of the Economic Studies Program at Brookings (1983-1987). She also served at the Department of Health, Education and Welfare as Assistant Secretary for Planning and Evaluation (1968-69). Rivlin received a MacArthur Foundation Prize Fellowship, taught at Harvard, George Mason, and New School Universities, has served on the Boards of Directors of several corporations, and as President of the American Economic Association. She is currently a member of the Board of Directors of BearingPoint and the Washington Post Company. She is a frequent contributor to newspapers, television, and radio, and has written numerous books. Her books include *Systematic Thinking for Social Action* (1971), *Reviving the American Dream* (1992), and *Beyond the Dot.coms* (with Robert Litan, 2001). She is co-editor (with Isabel Sawhill) of *Restoring Fiscal Sanity: How to Balance the Budget* (2004) and (with Litan) of *The Economic Payoff from the Internet Revolution* (2001). Rivlin was born in 1931 in Philadelphia, Pennsylvania and grew up in Bloomington, Indiana. She received a B.A. in economics from Bryn Mawr College in 1952; and in 1958 a Ph.D. from Radcliffe College (Harvard University) in economics.

**RUTH SIMMONS** believes in the power of education to transform lives. As an exemplary academic leader, she champions the university as a haven of reasoned debate with the responsibility to challenge students intellectually and prepare them to become informed, conscientious citizens. She has spent her career advocating for a leadership role for higher education in the arena of national and global affairs. As president of Brown University, Simmons has created an ambitious set of initiatives designed to expand the faculty; increase financial support and resources for undergraduate, graduate, and medical students; improve facilities; renew a broad commitment to shared governance; and ensure that diversity informs every dimension of the university. These initiatives have led to a major investment of new resources in Brown's educational mission. A French professor before entering university administration, President Simmons also holds an appointment as a professor of comparative literature and of Africana studies at Brown. She graduated from Dillard University in New Orleans before completing her PhD in Romance languages and literatures at Harvard. She served in various administrative roles in the University of Southern California, Princeton University, and Spelman College before becoming president Smith College, the largest women's college in the U.S. At Smith, she launched a number of initiatives including an engineering program, the first at an American women's college. In 2000, she was named president of Brown University. Simmons is the recipient of many honors, including a Fulbright Fellowship, the

2001 President's Award from the United Negro College Fund, the 2002 Fulbright Lifetime Achievement Medal, and 2004 Eleanor Roosevelt Val-Kill Medal. She has been a featured speaker in many public venues, including the White House, the World Economic Forum, the National Press Club, the American Council on Education, and the Phi Beta Kappa Lecture at Harvard University. She has been awarded numerous honorary degrees.

**ELIZABETH SPELKE** is Professor of Psychology and Co-Director of the Mind, Brain, and Behavior Initiative at Harvard University. She studies the origins and nature of knowledge of objects, persons, space, and number, by assessing behavior and brain function in human infants, children, human adults and non-human animals. A member of the National Academy of Sciences and the American Academy of Arts and Sciences, and cited by *Time* Magazine as one of America's Best in Science and Medicine, her honors include the Distinguished Scientific Contribution Award of the American Psychological Association and the William James Award of the American Psychological Society.

**JOAN STEITZ** is the Sterling Professor of Molecular Biophysics and Biochemistry at Yale University School of Medicine and an investigator at the Howard Hughes Medical Institute. She earned her B.S. in chemistry from Antioch College in 1963, and her Ph.D. in biochemistry and molecular biology from Harvard University in 1967. She spent the next three years in postdoctoral studies at the MRC Laboratory of Molecular Biology in Cambridge, and joined the Yale faculty in 1970. Steitz is best known for discovering and defining the function of small nuclear ribonucleoproteins (snRNPs), which occur only in higher cells and organisms. These cellular complexes play a key role in the splicing of pre-messenger RNA, the earliest product of DNA transcription. Steitz is a member of the National Academy of Sciences.

**ELAINE WEYUKER** is a principal technical staff member at AT&T Labs at Florham Park, NJ. Dr. Weyuker received a Ph.D. in Computer Science from Rutgers University, and an M.S.E. from the Moore School of Electrical Engineering, University of Pennsylvania. Before moving to AT&T Labs in 1993, she was a professor of Computer Science at the Courant Institute of Mathematical Sciences of New York University, NY, where she had been on the faculty since 1977. Her research interests are in software engineering, particularly software testing and reliability, and software metrics, and has published many papers in those areas. Among her honors, she has been elected to the National Academy of Engineering and as a Fellow of the IEEE, and has been named a Fellow of the ACM (Association of Computing Machinery). Dr. Weyuker is one of only two female AT&T Fellows. In each of the past six years, *The Journal of Systems and Software* has rated her as one of the top five software engineering researchers in the world. In November 2001, the NYC YWCA honored Dr. Weyuker as a "Woman Achiever" for both her career achievements and her community service. She has made major contributions to the formal foundations of testing and to establishing testing as an empirical discipline, and has been a prime mover in making testing a recognized, professional specialty. She has been a lecturer, teacher, and mentor, and has been actively involved in professional activities. She was a founding member of the ACM Committee on the Status of Women and Minorities, which was established to improve the status of under-represented groups by developing programs to target girls and young minority members. During her tenure, the committee established a successful distributed mentoring program.

**MARIA T. ZUBER** is the E.A. Griswold Professor of Geophysics at the Massachusetts Institute of Technology where she also leads the Department of Earth, Atmospheric, and Planetary Sciences. Zuber has been involved in more than half a dozen NASA planetary missions aimed at mapping the Moons, Mars, and several asteroids. She received her BA from the University of Pennsylvania and Sc.M. and PhD from Brown University. She was on the faculty at Johns Hopkins University and served as a research scientist at Goddard Space Flight Center in Maryland. She is a member of the National Academy of Sciences and American Philosophical Society, and a fellow of the American Academy of Arts and Sciences and of the American Geophysical Union, where she served as president of the Planetary Sciences Section. Among her awards are the NASA Distinguished Public Service Medal, the NASA Scientific Achievement Medal, and Brown University Horace Mann Medal, as well as a Scientific Achievement Award from the American Institute of Aeronautics and Astronautics. Professor Zuber served on the Mars Program Independent Assessment Team that investigated the Mars mission losses in 1999, and more recently on the Presidential Commission on the Implementation of the United Space Exploration Policy tasked with conceiving a plan to implement President Bush's Vision for Space Exploration. In 2002, *Discover* magazine named her one of the 50 most important women in science.

## REPRESENTED ORGANIZATIONS

The following organizations are represented at the Convocation on Maximizing the Potential of Women in Academe: Biological, Social, and Organizational Contributions to Science and Engineering Success:

American Assn. for the Advancement of Science  
American Chemical Society  
American Council on Education  
American Institute of Physics  
American Political Science Association  
American Society for Bone and Mineral Research  
American Sociological Association  
Arizona State University  
Association for Women in Science  
Association of American Colleges & Universities  
Augusta State University  
Biotechnology Institute  
Carnegie Institution of Washington  
Case Western Reserve University  
Centers for Disease Control and Prevention  
Clarion University  
Colorado College  
Columbia University  
Commission on Professionals in Science and Technology  
Consortium of Social Science Associations  
Dartmouth College  
Drexel University  
Duke University  
Gender Advisory Board, United Nations Commission on Science and Technology Development  
George Mason University  
George Washington University  
Harvard University  
Howard University  
Institute for Women's Policy Research  
Janet Bickel & Associates, LLC  
Jarvis Christian College  
John Jay College of Criminal Justice  
Kansas State University  
Kettering University  
Law School Admission Council  
Massachusetts Institute of Technology  
Montclair State University  
National Aeronautics and Space Administration  
National Education Association  
National Academy of Engineering  
National Institute of Child Health and Human Development  
National Institute of Drug Abuse  
National Institute of Health  
National Institute of Mental Health  
National Academy of Sciences  
National Postdoctoral Association  
National Science Board  
National Science Foundation  
Nature  
New Jersey Institute of Technology  
Northern Illinois University  
Novatarg Pharmaceuticals, Inc.  
Office of Congressman Rush Holt  
Office of Intramural Research, National Institutes of Health  
Office of Research on Women's Health, National Institutes of Health  
Pennsylvania State University  
Pragmatica Corporation  
Pratt School of Engineering  
Purdue University  
Rensselaer Polytechnic Institute  
Rochester Institute of Technology  
Rutgers Center for Women & Work  
SMD Earth-Sun Systems Division  
Society for Women's Health Research  
Society of Women Engineers  
State University of New York- Buffalo  
Syracuse University  
Temple University  
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University at Albany  
University of Arizona  
University of California, Santa Cruz  
University of California, Berkeley  
University of California, Irvine  
University of Chicago  
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University of Maryland  
University of Miami  
University of Michigan  
University of Montana  
University of Minnesota  
University of Nebraska-Lincoln  
University of Oregon  
University of Pittsburgh  
University of Virginia  
University of Washington  
University of Wisconsin-Madison  
Virginia Polytechnic Institute and State University  
Western Washington University  
Women in Science and Engineering Institute  
Women in Engineering Programs & Advocates Network  
Worcester Polytechnic Institute  
Wright State University - Lake Campus  
Yale University