

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

Includes updated participant list and agenda

UNDERSTANDING INTERVENTIONS THAT ENCOURAGE MINORITIES TO PURSUE RESEARCH CAREERS: MAJOR QUESTIONS AND APPROPRIATE METHODS

Board on Life Sciences • National Research Council

Thursday-Friday, May 3-4, 2007

American Association for the Advancement of Science
1200 New York Avenue, N.W. • Washington, D.C. 20005

<http://www.nationalacademies.org/moreworkshop>



This project is supported by Contract No. N01-OD-4-2139 (Task Order #172) between the National Academy of Sciences and the National Institutes of Health, National Institute of General Medical Sciences, Division of Minority Opportunities in Research.

HHMI
HOWARD HUGHES MEDICAL INSTITUTE

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**UNDERSTANDING INTERVENTIONS THAT ENCOURAGE MINORITIES TO PURSUE RESEARCH
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Thursday-Friday, May 3-4, 2007

Auditorium
American Association for the Advancement of Science
1200 New York Avenue, N.W. • Washington, D.C. 20005

AGENDA

THURSDAY, MAY 3, 2007

8:00 a.m. **Registration opens**

8:30 a.m. **Welcome and Introductions**

- Anthony L. DePass (Committee Co-Chair), *Associate Dean of Research and Associate Professor of Biology, Long Island University–Brooklyn*
- Larry V. Hedges (Committee Co-Chair), *Board of Trustees Professor of Statistics and Social Policy, Northwestern University*

8:45 a.m. **Sponsor's Charge to Workshop Participants**

- Clifton A. Poodry, *Director, Division on Minority Opportunities in Research, National Institute of General Medical Sciences, NIH*

9:00 a.m. **Setting the context: Factors affecting career choice and training**

This session will look at the underlying issues of career choice from the perspective of different disciplines, such as psychology, higher education studies, and economics. The session will emphasize the systems aspect of students' decision-making process, the way that many different factors contribute, and highlight different approaches to these questions.

Session Chair: Carol B. Muller (Committee Member), *Founder, President, and Chief Executive Officer, MentorNet*

- Robert W. Lent, *Professor of Counseling and Personnel Services and Co-Director, Counseling Psychology Program, College of Education, University of Maryland, College Park*
- Claude Steele, *Director, Center for Advanced Study in the Behavioral Sciences; Professor of Psychology and Lucie Stern Professor in the Social Sciences; Stanford University*
- Michael T. Nettles, *Senior Vice President and Edmund W. Gordon Chair of the Policy Evaluation and Research Center, Educational Testing Service*
- Anne Preston, *Associate Professor of Economics, Haverford College*

10:45 a.m. Break

11:10 a.m. **Setting the Context: Responses and Discussion**

Session Chair: Karen Kashmanian Oates (Committee Member), *Provost and Professor of Biochemistry, Harrisburg University of Science and Technology*

- Orlando L. Taylor, *Vice Provost for Research, Dean of the Graduate School, and Professor of Communication, Howard University*

12:00 p.m. Lunch

1:00 p.m. **Remarks from NIGMS Director**

- Jeremy M. Berg, *Director, National Institute of General Medical Sciences, NIH*

1:15 p.m. **Keynote Address**

- Elias A. Zerhouni, *Director, National Institutes of Health*

1:45 p.m. **State of knowledge and avenues of investigation**

This session will provide an overview of the existing knowledge base and introduce some of questions and approaches that are currently being pursued.

Session Chair: Daryl E. Chubin (Committee Member), *Director, AAAS Center for Advancing Science & Engineering Capacity, American Association for the Advancement of Science*

- David R. Burgess, *Professor of Biology, Boston College*
- Yolanda S. George, *Deputy Director, Education and Human Resources Programs, American Association for the Advancement of Science*

2:50 p.m. Break

3:10 p.m. **Technical assistance workshop**

This session will focus on technical aspects of research in this area, with discussion of issues such as framing of researchable questions, experimental design, and quantitative analysis.

Session Chair: Larry V. Hedges (Committee Co-Chair), *Board of Trustees Professor of Statistics and Social Policy, Northwestern University*

Overview of NIH Efficacy of Interventions to Promoted Research Careers R01 Program

- Shiva P. Singh, *Program Director, Division on Minority Opportunities in Research, National Institute of General Medical Sciences, NIH*

1. Problem Formulation: Asking answerable questions that will advance our understanding of how to increase minority representation in biomedical and behavioral sciences.

This includes situating the research questions in the context of some body of existing knowledge (theory or empirical work). It also involves posing questions that relate to what is known and promises to advance it in a meaningful way. It requires research questions that are broad enough to be important but narrow enough to be answered (or informed in a meaningful way) from a feasible research study. This discussion will be grounded in the kinds of research problems that are relevant to understanding how to increase minority representation in biomedical and behavioral sciences.

- Barry R. Komisaruk, *Associate Dean of the Graduate School, Professor II of Psychology, and Rutgers University Board of Governors Distinguished Service Professor, Rutgers, The State University of New Jersey*
- Martin M. Chemers, *Professor of Psychology, University of California, Santa Cruz*

2. Research Design: Specifying procedures to collect data that can inform that question.

This begins with making clear what will be done (what the research design is). It will include providing a persuasive argument that the proposed research design is feasible (e.g., that it can be carried out, that the individuals invited are likely to participate in the study, etc.) and that the proposed design can provide clear answers to the research questions. At a minimum, this requires a persuasive argument that the proposed design minimizes possible biases and that the proposed analyses will have enough precision or statistical power to detect the effects or relations between variables that are crucial to answering the research questions. It also includes descriptions of how key research concepts used (such as interventions and measures of outcomes) will be operationalized.

- Larry V. Hedges (Committee Co-Chair), *Board of Trustees Professor of Statistics and Social Policy, Northwestern University*

3. Analysis: Specifying the procedure that will be used to reach conclusions from the data collected.

This includes specifying a data reduction and/or analysis procedure that is appropriate for the research design and will provide clear answers to the research questions. The session will not provide an exhaustive discussion of all relevant analysis procedures but will provide examples of some of the most relevant techniques—and motivate why they should be considered.

- Kenneth I. Maton, *Professor of Psychology, University of Maryland, Baltimore County*

5:30 p.m. Reception and informal discussion
Sponsored by the Howard Hughes Medical Institute

FRIDAY, MAY 4, 2007

8:00 a.m. **Breakout discussions on research questions and approaches** (please go immediately to the breakout room; a light breakfast will be available in the second floor lobby)

This session will follow on the earlier discussions, allowing participants to interact with other participants from similar types of institutions in smaller groups and focus on the types of research questions and approaches that are of most interest.

Each breakout group should prepare to make a 5-minute presentation on the most important research questions and issues during the 9:30 a.m. reporting back session.

There will be three breakout sessions, based upon institution type:

- Research Institutions: *Auditorium*
- Primarily Undergraduate Institutions: *Abelson/Haskins Conference Room*
- Professional Societies: *Revelle Conference Room*

Others (e.g., government employees) are welcome to attend the session of their choice.

9:30 a.m. **Reporting back on breakout discussions**

Moderator: Anthony L. DePass (Committee Co-Chair), *Associate Dean of Research and Associate Professor of Biology, Long Island University—Brooklyn*

10:10 a.m. Break

10:30 a.m. **Panel on next steps, including community building and facilitating advancement**

This session will focus on the next steps for moving the research agenda forward. Among the panelists will be representatives from those who can help provide a venue for future work and discussion.

Session Chair: Howard H. Garrison (Committee Member), *Deputy Executive Director for Policy and Director, Office of Public Affairs, Federation of American Societies for Experimental Biology*

- Carol J. Burger, *Associate Professor, Center for Interdisciplinary Studies, and Director, Science & Gender Equity Program, Virginia Polytechnic Institute and State University; Editor-in-Chief, Journal of Women and Minorities in Science and Engineering;*
- Tuajuanda Jordan, *Senior Program Officer for Science Education, Howard Hughes Medical Institute*
- LaRuth C. McAfee, *Executive Director for Education, Department of Macromolecular Science and Engineering, Case Western Reserve University*
- Wanda E. Ward, *Deputy Assistant Director for Social, Behavioral & Economic Sciences (currently on detail as Deputy Assistant Director for Education and Human Resources), National Science Foundation*

12:30 p.m. **Concluding session**

- Anthony L. DePass (Committee Co-Chair), *Associate Dean of Research and Associate Professor of Biology, Long Island University*
- Larry V. Hedges (Committee Co-Chair), *Board of Trustees Professor of Statistics and Social Policy, Northwestern University*

12:45 p.m. Workshop adjourns



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Speaker and Panelist Biographical Sketches

Jeremy M. Berg, *National Institutes of Health*

Jeremy M. Berg became director of the National Institute of General Medical Sciences (NIGMS) in November 2003. He oversees a \$1.9 billion budget that funds basic research in the areas of cell biology, biophysics, genetics, developmental biology, pharmacology, physiology, biological chemistry, bioinformatics, and computational biology. The Institute supports more than 4,500 research grants—about 10 percent of the grants funded by NIH as a whole—as well as a substantial amount of research training and programs designed to increase the number of minority biomedical scientists.

Prior to his appointment as NIGMS director, Dr. Berg directed the Institute for Basic Biomedical Sciences at The Johns Hopkins University School of Medicine in Baltimore, MD, where he also served as professor and director of the Department of Biophysics and Biophysical Chemistry. In addition, he directed the Markey Center for Macromolecular Structure and Function and co-directed the W.M. Keck Center for the Rational Design of Biologically Active Molecules at the university.

Dr. Berg's research focuses on the structural and functional roles that metal ions, especially zinc, have in proteins. He has made major contributions to understanding how zinc-containing proteins bind to the genetic material DNA or RNA and regulate gene activity. His work, and that of others in the field, has led to the design of metal-containing proteins that control the activity of specific genes. These tailored proteins are valuable tools for basic research on gene function, and such proteins could one day have medical applications in regulating genes involved in diseases, as well. Dr. Berg has also made contributions to our understanding of systems that target proteins to specific compartments within cells and to the use of sequence databases for predicting aspects of protein structure and function.

Dr. Berg served on the faculty at Johns Hopkins from 1986-2003. Immediately before his faculty appointment, he was a postdoctoral fellow in biophysics at the university. His honors include a Presidential Young Investigator Award (1988-1993), the American Chemical Society Award in Pure Chemistry (1993), the Eli Lilly Award for Fundamental Research in Biological Chemistry (1995), and the Maryland Outstanding Young Scientist of the Year (1995). He also received teaching awards from both medical students and graduate students and served as an advisor to the Johns Hopkins Postdoctoral Association since its founding. Dr. Berg received B.S. and M.S. degrees in chemistry from Stanford University in 1980 and a Ph.D. in chemistry from Harvard University in 1985. He is a coauthor of more than 130 research papers and three textbooks, *Principles of Bioinorganic Chemistry*, *Biochemistry (5th Edition and 6th Edition)*, and *A Clinical Companion to Accompany Biochemistry*. NIGMS supported Dr. Berg's research from 1986-2003.

Carol J. Burger, *Virginia Polytechnic Institute and State University*

Carol J. Burger is an Associate Professor, Department of Interdisciplinary Studies and coordinator, Science and Gender Equity Program at Virginia Tech. She received a B.A. in chemistry from Dominican University, River Forest, IL and a Ph.D. in cellular immunology from Virginia Tech.

Burger has been interested in gender equity issues in science for many years. She is the founder and editor of the *Journal of Women and Minorities in Science and Engineering*, now in its 12th year of publication. She served as Senior Program Director, Program for Women and Girls, National Science Foundation in 1996. She teaches Introduction to Women's Studies, Biology of Women, and Women and Science classes.

She has been a co-investigator for the NSF-funded projects *Counseling for Gender Equity*; *Women in Information Technology: Pivotal Transitions from School to Careers*; and *Investigating the Gender Component: Cultures that Promote Equity in Undergraduate Engineering*.

Burger has authored monographs, over 50 peer-reviewed papers about tumor immunology research and women and STEM, and several book chapters and encyclopedia entries. She is the co-editor of the recently published book *Reconfiguring the Firewall: Recruiting Women to Information Technology across Cultures and Continents*.

David R. Burgess, *Boston College*

David R. Burgess, Ph.D., is a Professor of Biology at Boston College and a Past-President of the Society for the Advancement of Chicanos and Native Americans in Science, a 30 year-old organization committed to increasing the number of Hispanic and Native American scientists. His Cherokee great grandmother was a medicine woman, his father was a teacher and junior high school principal honored for serving minority students and his mother was a homemaker. He was raised in New Mexico and Northern California. His current research, funded by the National Institutes of Health since 1977, is in the area of cell division and on the science education pipeline for American Indians. He has received several awards including a Research Career Development Award from the NIH and the E.E. Just Award from the American Society for Cell Biology where he was recently elected to Council. He has been elected Fellow of American Association for the Advancement of Science.

He has served on numerous national panels, both in basic science review and on study sections whose goal is to increase the diversity of scientists. He serves on the Minority Action Committee of the American Society for Cell Biology, as advisor to the National Science Foundation and the AAAS for the NSF Alliance for Graduate Education for the Professoriate program, and the Committee on Opportunity in Science for AAAS. He has presented keynote addresses and lectures to tribal colleges, scientific societies, universities and other organizations on his research and in the area of training disparities for minorities in the sciences. He has served as an advisor to the Indian Health Service/National Institutes of General Medical Sciences, the National Institute on Drug Abuse, the National Science Foundation and has testified before the Congressional Commission on the Advancement of Women and Minorities in Science, Engineering, and Technology Development. He served as a member of the Advisory Committee for the Office of Research on Minority Health at the NIH, the Advisory Committee to the Director at NIH, the NIH National Human Genome Research Institute Advisory Council, the NSF Committee on Equal Opportunity in Science and Engineering and the Biological, and Environmental Research Advisory Committee for the Department of Energy.

Martin M. Chemers, *University of California, Santa Cruz*

Martin M. Chemers is Professor of Psychology at the University of California, Santa Cruz. Dr. Chemers arrived at UC Santa Cruz in 1995 from Claremont McKenna College to accept an appointment as the Dean of Social Sciences and Professor of Psychology. At UC Santa Cruz, he also served as Interim Executive Vice-Chancellor and Provost (December, 2003–April, 2004) and as Acting Chancellor (April, 2004–February, 2005). Prior to his tenure at UC Santa Cruz, he was the Henry R. Kravis Professor of Leadership and Organizational Psychology and Director of the Kravis Leadership Institute at Claremont McKenna College. He was previously on the faculties of the Universities of Illinois, Delaware, Washington, and Utah where he was chair of the Department of Psychology.

Since receiving his Ph.D. in Social Psychology from the University of Illinois in 1968, he has been an active researcher and has published books and articles on leadership, culture and organizational diversity and on academic success and adjustment. His popular, practitioner-oriented book *Improving Leadership Effectiveness: The Leader Match Concept* (written with Fred Fiedler) is widely used as a basis for leadership training. Dr. Chemers' books have been translated into German, Chinese, Japanese, Swedish, Spanish, and Portuguese. His most recent book, *An Integrative Theory of Leadership*, was published in 1997. The Japanese edition was published in 1999.

His current research is focused on psychological factors that affect the academic success and adjustment of underrepresented minority students.

Yolanda S. George, *American Association for the Advancement of Science*

Yolanda S. George is Deputy Director and Program Director of the Education and Human Resources Directorate (HER) at the American Association for the Advancement of Science (AAAS). Her responsibilities include conceptualizing, developing, implementing, and planning multi-year projects related to increasing the participation of minorities, women, and disabled persons in science and engineering. She directs or co-directs a number of projects including Science Linkages in the Community (SLIC), the AAAS Black Church Project, and Science Education Reform for All (a joint science policy project the Council of Chief State School Officers). These initiatives are all aimed at developing and strengthening out-of-school programs for school-age children operated by community-based groups including youth serving organizations, churches, science museums, zoos, libraries, and others.

She has served as Director of Development for the Association of Science-Technology Centers (ASTC) and Director of a pre-college, university retention, and pre-graduate school program at the University of California, Berkeley. As a laboratory biologist, Ms. George worked with a biophysics group involved in cell cycle using the flow cytometer and the cell sorter.

Ms. George has authored or co-authored over 35 papers, pamphlets, and hands-on science manuals including *Get into the Equation: Math and Science, Parents and Children*; the *In Touch with Science* series (a series of 6 inquiry-based manuals for use with parent youth-serving organizations); and *Science and Mathematics Reform: What Do Parents Need to Know to Get Involved?* She has several service awards from Lawrence Livermore Laboratory and University of California, Berkeley. She also has received local appreciation awards from the New Orleans Mayor's Office and Greater New Orleans Urban League. She received her B.S. and M.S. in biology from Xavier University of Louisiana and Clark University in Georgia, respectively.

Larry V. Hedges, *Northwestern University*

See biographical sketch on committee roster.

Tuajuanda Jordan, *Howard Hughes Medical Institute*

Tuajuanda Jordan received a B.S. degree in Chemistry from Fisk University in Nashville, Tennessee. During this time she engaged in research focused in organic synthesis as a MARC Scholar under the direction of the late Dr. I. Wesley Elliott. She earned a Ph.D. in Biochemistry from Purdue University in West Lafayette, Indiana, with Dr. Victor Rodwell as a MARC Predoctoral Fellow. She then did postdoctoral work with Dr. Judith Harmony at the University of Cincinnati, Medical Center, in Pharmacognosy and Cell Biophysics.

In 1994, she became a faculty member in the Department of Chemistry at Xavier University of Louisiana in New Orleans where she advanced to Associate Professor before assuming the position of Associate Dean in the College of Arts and Sciences in 2003. In 2005, Dr. Jordan was named Associate Vice President for Academic Affairs at Xavier. During her time at Xavier, Dr. Jordan served as Program Director of the National Science Foundation's Model Institution of Excellence Program. She was also a Visiting Scholar in the Department of Biophysics at The University of Michigan.

Dr. Jordan has devoted much of her professional career mentoring students and working with programs designed to retain underrepresented minorities in the STEM disciplines. Additionally, she is currently a member of the NIH MORE division's Minority Access to Research Careers subcommittee and has served as the chair of NIH's Minority Biomedical Research Support program and on numerous NIH and NSF scientific review panels. She is presently a Senior Program Officer at the Howard Hughes Medical Institute where she is developing the new center specifically focused on science education.

Barry R. Komisaruk, *Rutgers, The State University of New Jersey*

Barry R. Komisaruk, Ph.D., graduated from The City University of New York with a B.S. in Biology, received the Ph.D. in Psychobiology from Rutgers, The State University of New Jersey, Campus at Newark, an NIH postdoctoral fellowship in Neuroendocrinology at the Brain Research Institute of UCLA, and joined the faculty of Rutgers in 1966. He is a Behavioral Neuroscientist, Professor II in the Department of

Psychology; Rutgers University Board of Governors Distinguished Service Professor; Associate Dean of the Graduate School; and Adjunct Professor, Department of Radiology, University of Medicine and Dentistry of New Jersey. He has recently returned to Rutgers University from three-year U.S. government service as Program Director in the MORE Division of the National Institute of General Medical Sciences of the National Institutes of Health (NIH) in Bethesda, Maryland.

Prof. Komisaruk has received continuous research funding via numerous research grants and research awards, including those from the NIH, National Science Foundation (NSF), Christopher Reeve Paralysis Foundation, and, currently, The New Jersey Commission on Spinal Cord Research. His total grant funding has exceeded \$7.0 Million USD. His area of research specialty is the role of the brain, spinal cord, and peripheral nervous system in the control of reproductive behavior and physiology, and pain control, in humans and laboratory animals. His expertise in research methodology includes human brain imaging using functional magnetic resonance imaging, positron emission tomography, and electrophysiology.

Prof. Komisaruk has served on the Psychobiology Review Panel of the NSF, the editorial boards of biomedical and behavioral journals, and grant review panels of the NIH. He has served as the Chairman of the Institutional Review Board for the Protection of Human Subjects in Research of Rutgers University. He has been the doctoral dissertation supervisor of 22 PhDs, primary supervisor of 14 postdoctoral researchers, established a faculty-doctoral student exchange program with 5 universities and research centers in Mexico, including CINVESTAV (Centro de Investigación y de Estudios Avanzados), and conceptualized and played a major role in the development of the Center for Molecular and Behavioral Neuroscience at Rutgers University. He has published more than 145 research papers, more than 150 conference abstracts, and 3 books, the most recent of which, coauthored with Carlos Beyer-Flores and Beverly Whipple, is entitled *The Science of Orgasm* published by the Johns Hopkins University Press in 2006, now in its second printing.

Robert W. Lent, *University of Maryland, College Park*

Robert W. Lent is Professor and Co-Director, Counseling Psychology Program, Department of Counseling and Personnel Services, University of Maryland. He received his Ph.D. in counseling psychology from The Ohio State University in 1979. After serving as Staff Psychologist at the University of Minnesota's Student Counseling Bureau from 1979-85, he joined the counseling psychology faculty at Michigan State University (1985-95). He has been at the University of Maryland since 1995. Dr. Lent has published extensively on applications of social cognitive theory to academic and career behavior. His other research interests include counselor training and development, psychological wellness, relationship adjustment processes, and promotion of health behaviors. Dr. Lent is a Fellow of Division 17 (Counseling Psychology) of the American Psychological Association and a recipient of the John L. Holland Award for Outstanding Achievement in Career and Personality Research. Dr. Lent is co-editor, with S.D. Brown, of the *Handbook of Counseling Psychology* (1st – 3rd editions) and the newly released text, *Career Development and Counseling: Putting Theory and Research to Work*. Along with M.L. Savickas, he has also co-edited, *Convergence in Career Development Theories: Implications for Science and Practice*. He serves as Associate Editor of the *Journal of Social and Clinical Psychology* and is also on the editorial boards of the *Journal of Counseling Psychology* and the *Journal of Vocational Behavior*.

Along with Steve Brown and Gail Hackett, he has developed social cognitive career theory (SCCT; Lent, Brown, & Hackett, 1994, 2000, 2002). Derived from Bandura's general social cognitive theory, SCCT is concerned with the processes whereby people (a) develop basic academic and career interests, (b) form and revise educational and occupational choices, and (c) achieve performances of varying quality, and persist to varying degrees, at their academic/career pursuits. He has been researching and theorizing about social cognitive academic and career variables (e.g., self-efficacy) and processes (e.g., choice, performance) for over 20 years. SCCT has attracted a good deal of inquiry in the U.S. and internationally and been extended to school-to-work transition processes; adult career development; and the career development and work behavior of women, racial/ethnic minorities, gay and lesbian workers, and persons with physical and psychiatric disabilities.

The largest concentration of research on SCCT involves students in, or considering entry into, STEM-related academic fields. Findings indicate good support for the basic interest, choice, and performance hypotheses of SCCT. For instance, in a recent series of NSF-supported studies, STEM-related interests and goals, and actual persistence in STEM academic majors, were found to be strongly predicted by the set of social cognitive variables (e.g., self-efficacy, outcome expectations, environmental supports and barriers). The theory fit the data well across gender and in both historically Black and predominantly White university settings. SCCT is currently being employed as the theoretical foundation for a large-scale NSF-funded longitudinal study of persistence in computing majors.

Kenneth I. Maton, *University of Maryland, Baltimore County*

Ken Maton is Professor of Psychology and director of the Community-Social Psychology Ph.D. Program in Human Services Psychology at University of Maryland Baltimore County. His research focuses primarily on minority student achievement, including longitudinal evaluation of the Meyerhoff Scholars Program at UMBC. Recent books include: *Investing in Children, Youth, Families and Communities: Strengths-Based Research and Policy* (edited volume; American Psychological Association) and *Overcoming the Odds: Raising Academically Successful African American Females* (co-author; Oxford University Press). Dr. Maton is past-president of the Society for Community Research and Action (SCRA; APA Division 27), and the most recent winner of SCRA's Distinguished Contribution to Theory and Research Award. He serves on the editorial boards of *American Journal of Community Psychology*, *Analysis of Social Issues and Public Policy*, and *Journal of Community Psychology*.

LaRuth C. McAfee, *Case Western Reserve University*

LaRuth C. McAfee is Executive Director for Education at the Center for Layered Polymeric Systems (CLiPS), headquartered at Case Western Reserve University in Cleveland, OH. CLiPS is a new NSF Science and Technology Center established in August 2006. In her position, McAfee oversees all education and diversity programs in the Center, which comprises eleven member institutions. These programs include initiatives to encourage pre-college students to pursue polymer science careers, research and course development efforts for undergraduate and graduate students, and a unique research and educational partnership called the Case-Fisk Alliance.

Prior to joining CLiPS, McAfee completed a postdoctoral research project in engineering education at the Stony Brook University Department of Technology and Society. That project was sponsored by the National Academy of Engineering Center for the Advancement of Scholarship on Engineering Education. In the position, she studied promising practices in doctoral STEM education, with a special focus on programs to successfully recruit, retain, graduate, and place minority students.

A native of Ann Arbor, MI, Dr. McAfee earned her B.S.E. in chemical engineering at The University of Michigan and her Ph.D. in chemical engineering from the Massachusetts Institute of Technology. At MIT she researched the use of liquid crystalline block copolymers for actuator applications.

Michael T. Nettles, *Educational Testing Service*

Michael T. Nettles is Senior Vice President for Policy Evaluation and Research and holds the Edmund W. Gordon Chair for Policy Evaluation and Research at Educational Testing Service in Princeton, NJ. He has a national reputation as a policy researcher on educational assessment, student performance and achievement, educational equity, and higher education finance. Nettles' research covers such issues as educational access, opportunity, attainment, the consequences of education for various population groups in the United States, state and national assessment, educational funding policies, and educational testing of students at all levels of education. His publications reflect his broad interest in public policy, student and faculty access, opportunity, achievement, and educational assessment at both the K-12 and post-secondary levels. Nettles is the co-author of *Three Magic Letters: Getting to Ph.D.*

A native of Nashville, Nettles received his B.A. in political science at the University of Tennessee, and master's degrees in political science and in higher education, and a Ph.D. in higher education from Iowa State University.

Clifton A. Poodry, *National Institutes of Health*

Clifton Poodry is a biologist turned scientific administrator with research expertise in developmental genetics. He had a 22-year research and teaching career in cell biology and developmental genetics in *Drosophila* at the University of California, Santa Cruz, prior to joining NIGMS. At NIGMS, Poodry serves as director of the Division of Minority Opportunities in Research, where he oversees the administration of grants designed to increase the number and capabilities of minority biomedical scientists. These grants support a variety of activities, including research training, infrastructure improvement, curriculum enrichment, and laboratory research at minority institutions.

Poodry was a member of the Smithsonian Council from 1997-2003. He served as vice-chairperson of the National Research Council Committee on the High School Biology Curriculum in U.S. schools (1988-1990) and was a recipient of a National Science Foundation grant to provide training activities to teachers at American Indian schools (1988-1990). He has been a workshop leader for teacher training activities with the American Indian Science and Engineering Society (AISES) since 1990.

Poodry is a native of the Tonawanda Seneca Indian Reservation in western New York. He has twice been elected to the Board of Directors of the Society for Advancement of Chicanos and Native Americans in Science. He is a former board member of the American Indian Science and Engineering Society and a 1995 recipient of its highest award, the Ely S. Parker Award, for lifelong accomplishments in science and contributions to the American Indian community. Poodry received an honorary doctorate of science from The State University of New York at Buffalo in 1999.

Poodry has particular interest in science education and issues pertaining to American Indian participation in genetics research. He is the author of over 40 scientific papers and book chapters.

Anne Preston, *Haverford College*

Anne Preston received her B.A. from Princeton University and her Ph.D. from Harvard University. Currently an associate professor of economics at Haverford College, she has taught at Wellesley College and the University of Stony Brook. One of her primary research interests is the economics of the scientific labor force. Her book *Leaving Science* (Russell Sage Foundation, 2004) analyzes occupational exit of scientifically trained men and women with special attention to differences in levels of attrition, reasons for attrition and consequences of attrition by gender.

Shiva P. Singh, *National Institutes of Health*

Dr. Shiva P. Singh, Ph. D. is a Program Director in the Division of Minority Opportunities in Research (MORE) at the National Institute of General Medical Sciences (NIGMS). He manages a portfolio of research and training grants (including MBRS SCORE, RISE, and IMSD, MARC U-STAR, Bridges, Efficacy of Interventions, and K99/R00 grants) in the MORE Division. Prior to this position, Dr. Singh served as a Scientific Review Administrator (SRA), managing the review of research training grants and institutional program project-type applications at NIGMS. As SRA, he organized and managed the panel review of the first cycle of Efficacy of Interventions (R01) applications at NIGMS. Dr. Singh came to NIGMS from Alabama State University (ASU) in Montgomery, where he was Professor and Chair, Department of Biological Sciences, and Director of the university's Biomedical Research and Training Programs.

Dr. Singh earned a B.S. (with highest honors) in Agriculture (1969) and M.S. in Plant Pathology and Biochemistry (1971), both from Pant University of Agriculture and Technology in India, and a Ph.D. in Microbiology (1976) from Auburn University in Alabama. Dr. Singh's research interests at ASU focused on the immunochemical structure of the outer membrane proteins of gram-negative bacteria, the expression of HIV epitopes in *Salmonella*, and genomic fingerprinting of pneumococci. He also directed the training of

numerous high school, undergraduate and graduate students; over 75 of these students later pursued M.D., Ph.D., or other professional degrees.

Claude Steele, *Stanford University and Center for Advanced Study in the Behavioral Sciences*

Claude Steele is Lucie Stern Professor in the Social Sciences and past chair of the Department of Psychology at Stanford University. He is the Director of the Center for Advanced Study in the Behavioral Sciences. He received his B.A. from Hiram College and his M.A. and Ph.D. from Ohio State University. Steele has received the Dean's Teaching Award at Stanford University, the William James Fellow Award from the American Psychological Society, the Kurt Lewin Award and the Gordon Allport Prize in Social Psychology from the Society for the Psychological Study of Social Issues, the Distinguished Scientific Contribution Award and the Senior Award for Distinguished Contributions to Psychology in the Public Interest from the American Psychological Association, and the Cattell Faculty Fellowship. He is a member of the American Academy of Arts and Sciences and the National Academy of Sciences and he has been awarded honorary doctorates from the University of Michigan, University of Chicago, Yale University, and Princeton University.

Orlando L. Taylor, *Howard University*

Orlando L. Taylor is Vice Provost for Research, Dean of the Graduate School, and Professor of Communications at Howard University. Prior to joining the Howard faculty in 1973, Vice Provost Taylor was a faculty member at Indiana University. He also has served as a Visiting Professor at Stanford University and Visiting Scholar at the Carnegie Foundation for the Advancement of Teaching.

Dr. Taylor is a national leader in graduate education and within his discipline. He is currently or has served previously as a member of numerous national boards, including the Board of Directors of the Council of Graduate Schools (CGS), for which he served as Board Chair in 2001. He is also a Past President of the Northeastern Association of Graduate Schools and the National Communication Association. He is a former member of the Advisory Committee of the Directorate for Education and Human Resources of the National Science Foundation and of the Advisory Council at the National Institutes of Health. He is also the former president of the Consortium of Social Science Associations and a current member of the Board of Trustees of the University Corporation for Atmospheric Research. He chairs the National Advisory Board for the Center for the Integration of Research, Teaching and Learning, a major NSF-funded center at the University of Wisconsin.

Currently, Vice Provost Taylor serves as PI on major grants from the National Science Foundation to increase the production of minority Ph.D. recipients in science, technology, mathematics and engineering (STEM) and in the social, behavioral and economic (SBE) sciences; as well as from the U.S. Department of Education to develop collaborative academic and research programs between universities in Brazil and in four European Union countries with those in the United States. He is the author of numerous articles, chapters, and books.

Purdue University awarded Vice Provost Taylor an Honorary Doctor of Letters degree in 1994 and Hope College awarded him an Honorary Doctor of Letters degree in August 2001. DePauw University awarded him a Doctor of Pedagogy degree in 2004. The American Speech-Language-Hearing Association awarded him its highest award, Honors of the Association, and the Alumni Association of the University of Michigan awarded him its Distinguished Service Alumni Award. In August, Taylor will receive the Honorary Degree, Doctor of Higher Education from The Ohio State University.

Dr. Taylor received his bachelor's degree from Hampton University, master's degree from Indiana University, and Ph.D. degree from the University of Michigan.

Wanda E. Ward, *National Science Foundation*

Wanda Ward, Ph.D. is deputy assistant director for the Social, Behavioral and Economic (SBE) Sciences Directorate of the National Science Foundation (NSF). Dr. Ward has had unique opportunities to influence the diversity of the science and technology workforce throughout her career. She attained her B.A.

in Psychology and the Afro-American Studies Certificate from Princeton University in 1976 and her Ph.D. in Psychology from Stanford University in 1981.

Following her education, Ward entered academia in 1981 as Assistant Professor of Psychology at the University of Oklahoma, where she subsequently earned tenure and promotion to Associate Professor. While at Oklahoma, she founded the Center for Research on Multi-Ethnic Education, remaining its Director for almost 10 years.

She left academe in 1991 to accept a new position as Program Director of Career Access Programs with the National Science Foundation (NSF). In this role, she directed national precollege programs to increase the participation of underrepresented ethnic/racial minority groups in science, engineering, mathematics and technology fields. Ward moved on to join the Education and Human Resources Directorate at NSF in January 1992, where she held increasing positions of leadership, from program officer to senior associate for policy and planning and where she played a major role in the development and implementation of the Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring Program (the nation's highest award for mentoring, established by the White House Office of Science and Technology Policy and administered by NSF).

In 1997 Ward was appointed Assistant to the Deputy Director in the Office of the Director, serving as principal advisor to the Director, Deputy Director and various management officials in promoting the goal of a diverse, globally-oriented workforce of scientists and engineers and a more scientifically and technologically literate U.S. citizenry. She was advisor on Foundation-wide program integration and human resource development and played a key leadership role in the establishment of a new NSF initiative to strengthen the national resource of information technology expertise by increasing information technology access and networking partnerships between smaller, minority-serving colleges and selected larger research universities. She also served as the NSF representative to the Interagency Working Group on the U.S. Science and Technology Workforce of the Future of the President's National Science and Technology Council (NSTC) Committee on Science (COS). She co-chaired that Working Group's 1998 national workshop on the workforce and managed the publication of the *Proceedings of a Workshop on the U.S. Science, Engineering and Technology Workforce of the Future: National Strategy, National Portfolio, National Resource Base* (1999). In addition, Ward serves as the executive liaison to the Congressionally-mandated Committee for Equal Opportunities in Science and Engineering, and the Congressional Commission on the Advancement of Women and Minorities in Science, Engineering and Technology Development.

In her new role as Deputy Assistant Director for SBE, Ward is the primary assistant to the Assistant Director in providing leadership and direction to the SBE Directorate. Budgeted at approximately \$146 million, the Directorate is comprised of four major units: the Division of Social and Economic Sciences, the Division of Behavioral and Cognitive Sciences, the Division of International Programs and the Division of Science Resources Studies. She is also actively engaged in promoting the full participation of underrepresented minorities and women in the social and behavioral sciences at the national and international levels, including developing nations in Africa, Latin America and the Caribbean.

Ward is a member of the American Psychological Association, where she served as NSF Liaison to the APA Commission on Ethnic Minority Recruitment, Retention and Training in Psychology; the American Association for the Advancement of Science; the Association of Black Psychologists; and the American Educational Research Association.

Elias A. Zerhouni, *National Institutes of Health*

NIH Director Elias A. Zerhouni, M.D., leads the nation's medical research agency and oversees the NIH's 27 Institutes and Centers with more than 18,000 employees and a fiscal year 2006 budget of \$28.6 billion. The NIH investigates the causes, treatments, and preventive strategies for both common and rare diseases helping to lead the way toward important medical discoveries that improve people's health and save lives. More than 83% of the NIH's funding is awarded through almost 50,000 competitive grants to more than 325,000 scientists and research support staff at more than 3,000 universities, medical schools, and other research institutions in every state and around the world. About 10% of the NIH's budget supports projects

conducted by nearly 6,000 scientists in its own laboratories, most of which are on the NIH campus in Bethesda, Maryland.

Dr. Zerhouni, a well-respected leader in the field of radiology and medicine, has spent his career providing clinical, scientific, and administrative leadership. Since being named by President George W. Bush to serve as the 15th Director of the National Institutes of Health, beginning in May 2002, Dr. Zerhouni has overseen the completion of the doubling of the NIH budget; initiated the NIH Roadmap for Medical Research; established an NIH-wide research initiative to address the obesity epidemic; supported the NIH Neuroscience Blueprint; supported the reduction of health disparities and barriers to opportunity for minority individuals; ensured public access to NIH-funded research results; committed to earn the public's trust; and enhanced the leadership of NIH

Prior to joining the NIH, Dr. Zerhouni served as executive vice-dean of Johns Hopkins University School of Medicine, chair of the Russell H. Morgan department of radiology and radiological science, and Martin Donner professor of radiology, and professor of biomedical engineering. Before that, he was vice dean for research at Johns Hopkins.

Dr. Zerhouni was born in Nedroma, Algeria and came to the United States at age 24, having earned his medical degree at the University of Algiers School of Medicine in 1975. After completing his residency in diagnostic radiology at Johns Hopkins in 1978 as chief resident, he served as assistant professor in 1979 and associate professor in 1985. Between 1981 and 1985 he was in the department of radiology at Eastern Virginia Medical School and its affiliated DePaul Hospital. In 1988, Dr. Zerhouni returned to Johns Hopkins where he was appointed director of the MRI division, and then was appointed full professor in 1992 becoming the chairman of the radiology department in January 1996.

Since 2000, he has been a member of the National Academy of Sciences' Institute of Medicine. He served on the National Cancer Institute's Board of Scientific Advisors from 1998-2002. In 1988, he was a consultant to the World Health Organization, and in 1985 he was a consultant to the White House under President Ronald Reagan.

A resident of Baltimore, he has won several awards for his research including a Gold Medal from the American Roentgen Ray Society for CT research and two Paul Lauterbur Awards for MRI research. His research in imaging led to advances in Computerized Axial Tomography (CAT scanning) and Magnetic Resonance Imaging (MRI) that resulted in 157 peer reviewed publications and 8 patents.

THE NATIONAL ACADEMIES

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UNDERSTANDING INTERVENTIONS THAT ENCOURAGE MINORITIES TO PURSUE RESEARCH CAREERS: MAJOR QUESTIONS AND APPROPRIATE METHODS

Statement of Task

The study and identification of contributing factors and practices that determine the effectiveness of interventions aimed at increasing the participation of underrepresented minorities in the biomedical and behavioral sciences is critical for program design and success. The National Academies will organize a public workshop that, among its goals, will include the following:

1. An examination of the current state of research related to interventions that influence the participation of underrepresented minorities in biomedical and behavioral sciences and other science, technology, engineering, and mathematics disciplines. This will include an assessment of factors relevant to studies in related disciplines such as psychology, sociology and economics.
2. The development of research questions that reflect contributions of various factors influencing outcomes. This would include the relationship of these factors to interdisciplinary approaches for scholarly work in the study of interventions that impact the participation of underrepresented minorities in the biomedical and behavioral sciences.
3. Technical assistance on implementing effective methodologies for studying interventions that impact the participation of underrepresented minorities in the biomedical and behavioral sciences.
4. The encouragement of an interdisciplinary community of scholars where outlets (e.g., journals, conferences, sponsored programs) for scholarly work and discourse are identified relevant to this area of study.

This public workshop will feature invited presentations and discussions. An individually authored summary of the workshop will be prepared by a designated rapporteur, who will not be a member of the ad hoc committee that will plan and conduct the event.

This project is supported by Contract No. N01-OD-4-2139 (Task Order #172) between the National Academy of Sciences and the National Institutes of Health, National Institute of General Medical Sciences, Division of Minority Opportunities in Research.

For more information, please see <http://www.nationalacademies.org/moreworkshop>.

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Associate Professor of Biology
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UNDERSTANDING INTERVENTIONS THAT ENCOURAGE MINORITIES TO PURSUE RESEARCH CAREERS: MAJOR QUESTIONS AND APPROPRIATE METHODS

Biographical Sketches

CO-CHAIRS

Anthony L. DePass, *Long Island University*

Anthony L. DePass is the Associate Dean of Research and Associate Professor of Biology at the Brooklyn campus of Long Island University. Originally trained as a plant biologist, Dr. DePass currently directs a funded research program that explores cancer related gene regulation. His laboratory provides training for students at the high school, undergraduate, and masters levels, and has consistently placed students (many from underrepresented minorities in the sciences) in competitive doctoral programs. Additionally, Dr. DePass is a Co-PI (LIU award) and a member of the Administrative Core of a NIH-NCI funded partnership between Long Island University and Columbia University. This partnership promotes and funds collaborations between LIU-Brooklyn and Columbia University faculty in cancer research. Dr. DePass' background in the areas of student and faculty development is quite extensive. He was the Principal Investigator and Co-Director of the Multimedia and Interactive Learning (MIL) project. The MIL Project trained Math and Science faculty from five institutions in the New York Metropolitan area in the development and utilization of multimedia applications designed to enhance the active role of students in the learning process. As chair of the Minority Affairs Committee for the American Society of Plant Biology and a member of the equivalent committee of the American Society for Cell Biology, Dr. DePass has coordinating several programs aimed at strengthening the pipeline through development at various level, including a visiting professors program to facilitate collaborations between minority-serving and research institutions, travel awards, mentoring activities, and training faculty and science coordinators at the K-12 levels. He has also served on several grant review panels at the NIH, NSF and other federal agencies.

Larry V. Hedges, *Northwestern University*

Larry V. Hedges is the Board of Trustees Professor of Statistics and Social Policy at Northwestern University, the university's most distinguished academic position. He is also a Faculty Fellow with the Institute for Policy Research at Northwestern. He was previously the Stella M. Rowley Professor of Education, Psychology, and Sociology at the University of Chicago. Hedges' research straddles sociology, psychology, and educational policy and is best known for his work to develop statistical methods for meta-analysis (a statistical analysis of the results of multiple studies that combines their findings) in the social, medical, and biological sciences. Examples of some his recent studies include: understanding the costs of generating systematic reviews, differences between boys and girls in mental test scores, the black-white gap in achievement test scores, and frameworks for international comparative studies on education. He has authored or co-authored numerous journal articles and five books, including the seminal *Statistical Methods for Meta-Analysis: A Practical Guide to Modern Methods of Meta-Analysis* (with I. Olkin) and *The Handbook of Research Synthesis* (with H. Cooper). He has been elected a member or fellow of numerous boards, associations and professional organizations, including the National Academy of Education, the American Statistical Association, the American Psychological Association, and the Society of Multivariate Experimental Psychology and chairs the Technical Advisory Group of the U.S. Department of Education's What Works Clearinghouse. Dr. Hedges holds a B.A. in mathematics from the University of California, San Diego, and an M.A. in statistics and Ph.D. in Mathematical Methods in Educational Research from Stanford University.

MEMBERS

Daryl E. Chubin, *American Association for the Advancement of Science*

Daryl E. Chubin became Director of the new AAAS Center for Advancing Science & Engineering Capacity at the American Association for the Advancement of Science in August 2004. Prior to that, he served 3+ years as Senior Vice President, Research, Policy & Programs, at the National Action Council for Minorities in Engineering (NACME) Inc., in White Plains, New York, after nearly 15 years in federal service. Government posts included three years (1998-2001) as Senior Policy Officer for the National Science Board at the National Science Foundation (NSF); Division Director for Research, Evaluation and Communication in NSF's Directorate for Education and Human Resources (1993-98); and (on detail) Assistant Director for Social and Behavioral Sciences (and Education) at the White House Office of Science and Technology Policy (1997). He began his federal career in 1986 at the congressional Office of Technology Assessment.

Dr. Chubin earned a Ph.D. in sociology from Loyola University (Chicago) in 1973. He has served on the faculty of four universities, including Georgia Tech, where he was promoted to full professor. He has published eight books and numerous policy reports, articles, and commentaries on issues in science policy, human resource development, program evaluation, and engineering education. Among Chubin's honors are: AAAS Fellow, Past Chair of the AAAS section on Societal Impacts of Science and Engineering, Fellow of the Association for Women in Science, member of the National Academy of Engineering Committee on Diversity in the Engineering Workforce, Integrator for BEST (Building Engineering and Science Talent), and co-recipient of the American Society of Engineering Education Wickenden Award for best paper published in the 2003 volume of *The Journal of Engineering Education*.

Howard H. Garrison, *Federation of American Societies for Experimental Biology*

Howard H. Garrison has been the Director of the Office of Public Affairs at the Federation of American Societies for Experimental Biology (FASEB) since the office was created in 1996. He is also FASEB's Deputy Executive Director for Policy. He previously directed FASEB's Office of Policy Analysis and Research and was Group Manager for the Survey and Evaluation Services Unit for Aspen Systems Corporation, staff officer for the Institute of Medicine's Committee on Biomedical and Behavior Research Personnel, and Statistician with the Federal Personnel and Compensation Division for the U.S. General Accounting Office. Trained as a sociologist, Dr. Garrison has experience in biomedical research policy, statistical analysis, scientific workforce analysis, program evaluation and surveys for agencies including NSF and NIH. He is currently Vice President and member of the Board of Directors for the Commission on Professionals in Science and Technology, past President of the District of Columbia Sociological Society, and a former member of the NIH Minority Access to Research Careers Study Advisory Group. Dr. Garrison earned his A.B. from the University of Michigan and M.S. and Ph.D. from the University of Wisconsin-Madison.

Carol B. Muller, *MentorNet*

Carol B. Muller is the Founder, President, and Chief Executive Office of MentorNet, *The E-Mentoring Network for Diversity in Engineering and Science*. MentorNet (www.MentorNet.net) is a nonprofit organization headquartered in San José, CA. Founded in 1997, its mission is to further the progress of women and others underrepresented in scientific and technical fields through the use of a dynamic, technology-supported mentoring program; and to advance individuals and society, and enhance engineering and related sciences, by promoting a diversified, expanded and talented global workforce. She is responsible for establishing and implementing the vision for the organization and its programs, developing needed resources, and managing those resources with the help of staff, volunteers, and partners to produce services of high quality and deliver results. In addition to serving as MentorNet's President and CEO, she is a consulting Associate Professor of Mechanical Engineering at Stanford University. Both Dartmouth's campus-wide Women in Science Project, which Dr. Muller co-founded and developed when she served as associate dean for Thayer School of Engineering, and MentorNet have been recognized with the Presidential Award for Excellence in Science,

Mathematics and Engineering Mentoring. She earned a bachelor's degree in philosophy and English from Dartmouth College, and masters and doctoral degrees in education administration and policy analysis from Stanford University.

Karen Kashmanian Oates, *Harrisburg University of Science and Technology*

Karen Kashmanian Oates is the Provost at Harrisburg University of Science and Technology. She previously spent fifteen years on the faculty at George Mason University after a successful career as a research scientist in both private industry and at the National Institutes of Health/National Cancer Institute where her research focused on the active effects and characterization of thymic hormones in immune restoration and cancer therapy. During her tenure at George Mason, Oates held several key leadership positions, including as associate dean for College of Integrative Studies (New Century College). Oates is co-PI for the National Center for Science and Civic Engagement, co-PI for Science Education for New Civic Engagements and Responsibilities, and senior science advisor for the International Women in Science and Engineering. She conducts faculty development workshops on topics including assessment strategies, service learning, community- and discovery-based undergraduate research, using research to inform curricular design, and pedagogies associated with learning communities. Dr. Oates was previously senior science fellow for the Association of American Colleges and Universities. She received her B.S. in Biology from Rochester Institute of Technology and her Ph.D. in Biochemistry from George Washington University.

STAFF

Adam P. Fagen, *Board on Life Sciences, National Research Council* (Study Director)

Adam P. Fagen is a Program Officer with the Board on Life Sciences of the National Research Council. He came to the National Academies from Harvard University, where he most recently served as Preceptor on Molecular and Cellular Biology for the 300-student undergraduate genetics course. He earned his Ph.D. in molecular biology and education from Harvard, working with physicist Eric Mazur on issues related to undergraduate science courses; his thesis focused on mechanisms for assessing and enhancing the introductory science course in biology and physics to encourage student learning and conceptual understanding. Fagen also received an A.M. in molecular and cellular biology from Harvard, based on laboratory research in molecular evolutionary genetics, and a B.A. from Swarthmore College with a double-major in biology and mathematics. In addition to genetics and molecular biology, he is interested in improving undergraduate and graduate science education and other scientific workforce and policy issues. He served as co-director of the 2000 National Doctoral Program Survey, an on-line assessment of doctoral programs organized by the National Association of Graduate-Professional Students and supported by the Alfred P. Sloan Foundation.

Since coming to the National Academies, Fagen was study director for *Bridges to Independence: Fostering the Independence of New Investigators in Biomedical Research* (2005) and co-study director for *Treating Infectious Diseases in a Microbial World: Report of Two Workshops on Novel Antimicrobial Therapeutics* (2006). He is study director or staff officer for several ongoing projects including the National Academies Summer Institute on Undergraduate Education in Biology, A Leadership Summit to Effect Change in Teaching and Learning: Undergraduate Education in Agriculture, the National Academies Human Embryonic Stem Cell Research Advisory Committee, Biomolecular Materials and Processes, and Frontiers of Science at the Interface of the Physical and Life Sciences.

Tova G. Jacobovits, *Senior Program Assistant, Board on Life Sciences*:

Tova G. Jacobovits is a Senior Program Assistant with the Board on Life Sciences of the National Research Council. She joined the National Academies with an interest in science policy after an internship at the Department of State in the Office of Science and Technology Policy to the Adviser. At State, her

research focused on the methods used by the U.S. government to monitor international human subjects research. Jacobovits was first introduced to science policy through an internship with the American Association for the Advancement of Science (AAAS, in the Science, Freedom, Responsibility and Law Program) shortly after she graduated from the University of Wisconsin–Madison where she earned her B.S. degree in Biology and Hebrew Language.

Since coming to the National Academies in January 2006, Jacobovits has helped support numerous projects and reports. She is currently assisting the U.S. National Committee within the International Brain Research Organization, providing aid to neuroscientists in developing countries. She is also supporting the activities for a future NRC report, *Defining and Advancing the Conceptual Basis of Biological Sciences for the 21st Century*.

Jacobovits will soon leave the Academies to pursue a Ph.D. in nutrition at the University of Maryland. Her research interests include energy regulation, metabolism, and obesity; food and drug interactions; food safety and domestic food and agricultural policies.

Jay B. Labov, *Center for Education, National Research Council*

Jay B. Labov serves as a Senior Advisor for Education and Communications for the National Research Council. He also served for three years as Deputy Director for the NRC's Center for Education and was the study director and responsible staff officer for the NRC reports, *Evaluating and Improving Undergraduate Teaching in Science, Mathematics, Engineering, and Technology* (2003); *Learning and Understanding: Improving Advanced Study of Mathematics and Science in U.S. High Schools* (2002); *Educating Teachers of Science, Mathematics, and Technology: New Practices for the New Millennium* (2000); *Transforming Undergraduate Education in Science, Mathematics, Engineering, and Technology* (1999); *Serving the Needs of Pre-College Science and Mathematics Education: Impact of a Digital National Library on Teacher Education and Practice* (1999); and *Developing a Digital National Library for Undergraduate Science, Mathematics, Engineering, and Technology Education* (1998). He has served as Director of the Center for Education's Committee on Undergraduate Science Education, Committee on Science Education K-12, and the National Academies' Teacher Advisory Council. Dr. Labov is currently the co-PI for a multiyear grant from the National Science Foundation to the Center for Education and an NSF grant to offer workshops to grantees of the NSF's Math/Science Partnership Initiative that will enable them to better understand and implement the recommendations in NRC reports on education. He also currently oversees the NRC's and National Academy of Science's efforts to improve the teaching of evolution in the public schools and a recently expanded effort of the National Academies to work more closely with disciplinary and professional societies on education issues..

Prior to assuming his position at the NRC in August 1997, Dr. Labov was a member of the faculty in the Department of Biology at Colby College (ME), where he served two terms as Chair of the Division of Natural Sciences, Associate Chair of the Department of Biology, and as a member of numerous college committees and panels. He taught courses in Introductory Biology, Mammalian Anatomy and Physiology, Animal Behavior, and Neurobiology. His research and publications in the life sciences have dealt with physiological and behavioral aspects of reproduction in mammals. He was responsible for developing and overseeing a partnership program for Colby scientists and teachers in four local school districts. Dr. Labov also has worked with many national organizations and professional societies to improve science education for both pre-college and undergraduate students. He received a B.S. in Biology from the University of Miami and a M.S. in Zoology and Ph.D. in Biological Sciences from the University of Rhode Island.

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