WOMEN IN SCIENCE

at the National Institutes of Health

2007–2008

Office of Research on Women's Health

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at the National Institutes of Health

2007–2008

OFFICE OF
RESEARCH ON
WOMEN'S HEALTH

National Institutes of Health

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Acknowledgements

The National Institutes of Health (NIH) Coordinating Committee on Research on Women's Health (CCRWH), which advises the Director of the Office of Research on Women's Health on matters related to the mission of the ORWH, is composed of Institute and Center Directors, or their designees, and facilitated the submission of profiles from their Institutes, Centers, or Offices. Members of the CCRWH are listed on the following page.

The ORWH would like to acknowledge the specific efforts of a few individuals whose assistance was invaluable with initiation and completion of this effort. They are Eileen Crehan (Wellesley College student /Summer 2007 Intern, ORWH), Joslyn Yudenfreund Kravitz, Ph.D. (AAAS Science & Technology Policy Fellow/Office of Intramural Research), Jennifer Reineke Pohlhaus, Ph.D. (AAAS Science & Technology Policy Fellow/ORWH), and Janine Austin Clayton, M.D. (National Eye Institute/Deputy Director, ORWH).

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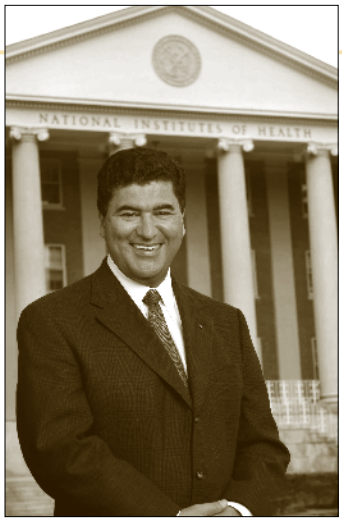

Foreword

As recent demographic and academic data demonstrate, the population earning advanced degrees in science and medicine continues to become more diverse. The change includes an increase in the number and proportion of women in that population. To help promote the advancement of women in research careers both within the National Institutes of Health (NIH) intramural community and throughout the extramural research community, in 2007, we established the NIH Working Group on Women in Biomedical Careers.[1] Through the Working Group's efforts, the NIH is striving to determine solutions that will shrink and eventually close the gender gap in sciences and engineering. I strongly believe that the future of the biomedical research enterprise depends on attracting the most gifted individuals. That is why this publication, *Women in Science at the National Institutes of Health, 2007–2008*, which highlights successful women at the NIH, can serve as an inspiration to both women and men.

This publication celebrates the careers and life accomplishments of talented female scientists and engineers who are part of the NIH community. Any discussion of "Women in Science" at the NIH must highlight the contributions of certain pioneering women. First among these is Ruth Kirschstein, M.D., Senior Advisor to the Director, NIH, and first female Director of an NIH Institute (National Institute of General Medical Sciences [NIGMS], 1974–1993). At a time when there were few women in science and medicine, she broke through barriers and helped change the NIH culture. Dr. Kirschstein also played a key role in establishing the Office of Research on Women's Health (ORWH) in the Office of the Director (1990). The ORWH works to develop opportunities for and to support the recruitment, reentry, retention, and advancement of women in biomedical careers.

Bernadine Healy, M.D., was the first female Director of the NIH, serving from 1991 to 1993. Dr. Healy was instrumental in elevating career opportunities for and advancing the status of women across the NIH landscape. She provided impetus for the ORWH to address women's health research and to improve opportunities for women in biomedical research careers. Dr. Healy appointed Vivian W. Pinn, M.D., as the first full-time Director of the ORWH, a position she has held since 1991. Under Dr. Pinn's direction, the ORWH and the NIH have worked to determine the barriers to success for women in biomedical careers and have devised strategies to eliminate those barriers.[2] Dr. Pinn, also the NIH Associate Director for Research on Women's Health, co-chairs the NIH Working Group on Women in Biomedical Careers with me.

I am particularly delighted to commend the invaluable contributions of two other women within the Office of the Director: Norka Ruiz Bravo, Ph.D., and Lana Skirboll, Ph.D. In 2003, Dr. Ruiz Bravo accepted the position of NIH Deputy Director for Extramural Research (she is the third woman to hold this position since its creation in 1983), and Director of the Office of Extramural Research. Dr. Skirboll has served as Director of the Office of Science Policy and the NIH Associate Director for Science Policy since 1995.

Turning to the NIH's 27 Institutes and Centers, we find women currently directing 6 (or 22 percent) of them—the highest proportion in the history of the NIH. I am sure the profiles of each of these women—Barbara M. Alving, M.D.; Josephine P. Briggs, M.D.; Patricia Grady, Ph.D., R.N.; Story Landis, Ph.D.; Elizabeth G. Nabel, M.D.; and Nora Volkow, M.D.—will inspire you.

I invite you to share in the stories of these dedicated and remarkable women in science. We are all fortunate to benefit from their leadership in the NIH community.

Elias A. Zerhouni, M.D.
Director, NIH

1 NIH Working Group on Women in Biomedical Careers, http://womeninscience.nih.gov/workinggroup.

2 ORWH Workshop Report, Women in Biomedical Careers: Dynamics of Change, Strategies for the 21st Century.

Introduction

I am delighted to present this publication, *Women in Science at the National Institutes of Health, 2007–2008*, which was sponsored and prepared by the Office of Research on Women's Health (ORWH), Office of the Director, National Institutes of Health (NIH), in collaboration with the NIH Coordinating Committee on Research on Women's Health (CCRWH). This publication was inspired by the brochure, National Institutes of Health: Women in Science, coordinated by Dr. Antonia Novello, then Deputy Director of the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, in collaboration with the NIH Advisory Committee on Women's Health Issues (predecessor of the CCRWH). Because of the current ongoing efforts of the NIH Working Group on Women in Biomedical Careers, appointed by the NIH Director, and also the impressive rise in the number of women scientists in recent years, it seemed an ideal time to prepare a similar publication and demonstrate the accomplishments and leadership of women scientists at the NIH.

Through the achievements and reflections of the accomplished members of the NIH community, this publication is intended to inspire young women and men to enter science careers, recognize role models of successful researchers, and consider careers within the NIH community. Rather than a directory of the totality of women scientists at the NIH, this effort is meant to highlight examples of the variety of roles, positions, and contributions of doctoral-level women in science across the NIH. In order to identify women scientists and leaders in the NIH community, members of the CCRWH assisted their Institutes, Centers, or Offices in selecting representative scientists and coordinating submissions from the outstanding women who are featured in this publication. I regret that we were unable to include all women scientists at the NIH, but the production of such a large document would have been prohibitive.

Profiles of the women are organized into NIH components, including the Office of the Director, and the 27 Institutes and Centers at the NIH. In addition to providing information about their position and education, featured women were asked to lend insight into their career paths by describing pivotal events that shaped their careers as scientists, commenting on mentoring experiences, and discussing their perspective on how to balance personal and professional responsibilities. Some women also provided details on their career milestones, scientific accomplishments, or other inspirational observations about being a woman in science.

The women represent diverse fields of accomplishments, backgrounds, positions, and career pathways. Many have provided comments on how they have successfully addressed dual professional and family responsibilities, a challenge often cited by young women considering careers in biomedical research. The brief biographical information about the women in this publication provides a perspective on where an interest in science can lead when combined with determination, guidance, experience, mentoring, and organizational support. In addition, the women in this publication have graciously provided details about life experiences that shaped their careers as women in science. Many of these women have served as mentors to other women and men, in addition to having benefited from mentoring themselves, which, in many cases, led to their pursuit of a career in science or to their chosen career pathway.

The achievements and accomplishments of these and other women who are currently or were previously at the NIH have demonstrated the magnitude and breadth of abilities and accomplishments of women in science, policy, programmatic, and research careers. I have been personally inspired by the historical legends who preceded the women included in this publication, and I hold in awe the current women leaders and leaders-to-be in the NIH community. These women scientists have earned the great respect with which they are regarded, both by those in the NIH community, and those in the greater scientific research community. I am very proud that the ORWH, in collaboration with the CCRWH and all of the Institutes, Centers, and Programmatic and Policy Offices in the Office of the Director, is able to present a snapshot in time of the women scientists in the NIH community.

Vivian W. Pinn, M.D.
Associate Director for Research on Women's Health
Director, Office of Research on Women's Health

The Office of Research on Women's Health honors the exemplary leadership of Dr. Ruth L. Kirschstein, who, among her many accomplishments, established the Office in 1990. Her rise to senior leadership began many years prior, when she was selected as the Director of the National Institute of General Medical Science, the first woman (and for many years, only woman) to serve as the Director of an NIH Institute or Center. Following these achievements, she has more recently been in the high-ranking positions of Deputy Director, NIH and Acting Director, NIH. In her current position as the Senior Advisor to the Director, NIH, Dr. Kirschstein continues to serve as a role model for women and men in research and scientific leadership positions. With all that she has attained, Dr. Kirschstein inspires others to reach for their career goals, which may, for many of us, include just one of the exceptional successes that she has realized over her lifelong career. —Vivian W. Pinn, M.D.

Special Tribute

Ruth L. Kirschstein, M.D.
Senior Advisor to the Director, NIH

Former NIH positions:

- Acting Director, National Center for Complementary and Alternative Medicine, 2006–2007
- Acting Director, National Institutes of Health, 2001–2002
- Deputy Director, National Institutes of Health, 1993–1999
- Acting Director, National Institutes of Health, 1993
- Acting Associate Director for Research on Women's Health, 1990–1991
- Director, National Institute of General Medical Sciences, 1974–1993
- Assistant Director, Division of Biologics and Standards, 1971–1972
- Chief, Laboratory of Pathology, Division of Biologics and Standards, 1965–1972
- Acting Chief, Laboratory of Pathology, Division of Biologics and Standards, 1964–1965
- Assistant Chief, Laboratory of Viral Immunology and Chief, Section of Pathology, Division of Biologics and Standards, 1962–1964
- Chief, Section of Pathology, Laboratory of Viral Immunology, Division of Biologics and Standards, 1960–1962
- Medical Officer and Pathologist, Laboratory of Viral Products, Division of Biologics and Standards, 1957–1960
- Medical Officer and Resident in Pathology, Clinical Pathology, Clinical Center, 1956–1957

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OFFICE OF THE DIRECTOR

Norka Ruiz Bravo, Ph.D.
Deputy Director for Extramural Research;
Director, Office of Extramural Research
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Vivian W. Pinn, M.D.
Associate Director for Research on Women's Health;
Director, Office of Research on Women's Health
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Lana Skirboll, Ph.D.
Associate Director for Science Policy;
Director, Office of Science Policy

INSTITUTE AND CENTER DIRECTORS

Barbara M. Alving, M.D.
National Center for Research Resources
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National Center for Complementary and Alternative Medicine
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National Institute of Nursing Research
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INSTITUTE AND CENTER DEPUTY DIRECTORS

Judith A. Cooper, Ph.D.
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National Institute of Biomedical Imaging and Bioengineering
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Susan Blakely Shurin, M.D.
National Heart, Lung, and Blood Institute
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Women in Science at the National Institutes of Health by Institute and Center

Office of the Director

Ruth L. Kirschstein, M.D.

Senior Advisor to the Director, NIH

EDUCATION

M.D.: Tulane University School of Medicine, 1951

B.A.: (Biology) Long Island University, 1947

RESEARCH INTERESTS

Pathology and pathogenesis of infectious diseases, live viral vaccines, tumor viruses, basic biomedical research, and predoctoral training

PIVOTAL EVENTS

The most pivotal event, which set the rest of my career in motion, was coming to NIH to work and getting a job in research. This led to studies of polioviruses and to the development of the critical tests for the safety of the oral poliovirus vaccine and the choice of the Sabin strains for vaccination of the people of the United States and eventually of people around the world. Indeed the disease, poliomyelitis, was eradicated in this country and in the Western Hemisphere more than 20 years ago.

Another pivotal event was my appointment in 1974 as Director of the National Institute of General Medical Sciences, the first woman to be appointed to such a high level at NIH.

Establishment and implementation of the Office of Research on Women's Health and service as the first Director was another important milestone.

In 1993, I was chosen to be the Deputy Director of NIH and, most importantly, to be Acting Director of NIH for 6 months before the appointment of Dr. Varmus. I was also appointed as Acting Director of NIH for 2 ½ years in 2000.

MENTORING & WORK/LIFE BALANCE

I have been married for over 56 years and have worked in my chosen profession all my life. I have achieved an appropriate balance because of the full and wonderful partnership with my husband and my son and our ability to enjoy life fully. I have compartmentalized my days and done each task as thoroughly as possible and as perfectly as I was able. I have met the challenges, of which there were many, as they came, and solved each problem as needed. Continuity of efforts and enjoyment of each moment have been the hallmarks of my life.

I have never had a mentor but I have mentored many, many young (and not so young) people, both women and men.

OFFICE OF THE DIRECTOR

INSIGHTS

The most important thing is to enjoy what one is doing and to gain total satisfaction doing it; to accomplish what is needed; be sure one has given one's best effort, even beyond one's ability; to be able to recognize mistakes, correct them, and admit when one is wrong; and to learn from them and move ahead.

Also, if your work does not make you happy, consider changing what you do. The happier one is, the greater will be the satisfaction with the job and the greater the satisfaction in the job, the happier one will be.

Have an open door policy to all. One should never be too busy to stop and help someone in need, regardless of rank or status. Treat all people equally.

Amy Bany Adams, Ph.D.

Special Assistant to the Director, NIH

EDUCATION

Ph.D.: (Cell Biology) Yale University School of Medicine, 2003

S.B.: (Biology) Massachusetts Institute of Technology, 1994

RESEARCH INTERESTS

My thesis work concerned the genetic and anatomic basis of the neurotransmitter signaling that regulates behavior in the C. elegans model system.

PIVOTAL EVENTS

I confess to being a true geek growing up – I loved all my classes in school and looking ahead to college, I couldn't decide whether to focus on the humanities or the sciences. Then I attended a 6-week summer science program in high school that included the opportunity to conduct your own research, and it changed my life. I was surrounded by incredibly impressive peers (including a 2006 Fields Medal winner), immersed in the thrills of scientific discovery and possibility, and spent the summer dazzled by the possibility of making the world a better place through research. The camaraderie and excitement of the scientific community I glimpsed that summer set me on the career path to becoming a scientist.

MENTORING & WORK/LIFE BALANCE

Balancing my professional and personal life took on a new dimension in August 2007, with the birth of my beautiful son, Jack.

Committing to starting a family was a bit daunting – there are tomes written about how hard it is to be a working mother. Furthermore, I moved away from the lab bench only a few years ago, and I am just establishing myself in the world of science policy – but the clock was ticking. Luckily, when I shared my concerns with an Institute Director, she counseled me to "just do it" – that there is never a perfect time to have a child, but there was no reason that I could not have a family and still succeed professionally. It was indescribably liberating to hear this advice from an incredible (and incredibly successful) woman scientist that I so admired.

Life as a working mother is challenging – I have never worked so hard in my life as I do now, balancing demands of family and work. However, it is all so much more fun than I ever hoped – watching my child grow into this fearless little person, every day has its miracle. Though my position includes a lot of unexpected, high-profile projects with quick deadlines, I have been able to thrive because my office provides a wonderfully supportive environment, and my colleagues and boss work hard to ensure I have the tools, resources, and flexibility I need to succeed.

Penny Wung Burgoon, Ph.D.

Senior Assistant to the Deputy Director, NIH

EDUCATION

Visiting Scholar: (Physiology) The Ohio State University, 2004

Postdoctoral Research Fellowship: (Neurophysiology) University of Illinois at Urbana-Champaign, 2001–2004

Postdoctoral Research Associate: (Neurophysiology) University of Illinois at Urbana-Champaign, 1997–2000

Ph.D.: (Physiology) The Ohio State University, 1997

M.S.: (Physiology) The Ohio State University, 1994

M.A.: (Exercise Physiology) California State University Northridge, California, 1989

B.A.: (Biology and Physical Education) Oberlin College, 1985

RESEARCH INTERESTS

My research was focused on central control of biological timing. I studied the circadian clock and circadian rhythms in humans and mammalian models. I began examining aspects of human performance and physiology at different times of day and under different conditions. Then, I examined the brain control of the biological clock and its mechanisms of operation.

PIVOTAL EVENTS

With a master's degree in human physiology, I ran a clinical chemistry lab for an Army medical research center. I provided overall research support in tissue collection, data collection, and analysis to a number of investigators conducting human research studies. This period coincided with Operation Desert Storm, and our research quickly stopped and was redirected toward mission-specific needs.

In retrospect, this period was really instrumental in my subsequent years because:

» It gave me great confidence in my skills and ability to apply new knowledge and techniques;

» I learned that I could perform well and manage the efforts of others under highly stressful conditions;

» I could appreciate the immediate impact of my efforts on the knowledge of human physiology, performance, and the mission of the army;

» I learned how research could be very team-oriented, as well as individually focused;

» This experience gave me a clear understanding of why and how I wanted to pursue further training in biology and physiology. It was a great jump-off point toward my doctoral degree.

MENTORING & WORK/LIFE BALANCE

Some of my most difficult times during my career have led to the most profound changes in my work/life balance. These periods of self-assessment have often been followed by times of great satisfaction and reward. As with many women, I struggled with balancing family and career. This ultimately led me to identify what was really important to me regarding science and my career, and everything else could be changed. That was a very "freeing" moment for me, allowing me to subsequently redirect my career down a different but very rewarding path in working for the NIH.

I was happily surprised to discover that moving into science policy required many of the same skill sets that I used for research. Problem solving, team work, research, and eureka moments – it still works for me.

One of my better lessons learned along the way was to stop looking for the "cool" projects and start looking for the good mentors. If you look carefully, you can find both; but I needed a person who would help me look out for my best interests.

Vesna Kutlesic, Ph.D.

Special Assistant to the Director, NIH

EDUCATION

Fellowship: American Association for the Advancement of Science, Science and Technology Policy Fellowship, NIH, 2006–2008

Internship/Postdoctoral Fellowship: (Child Clinical Psychology) University of New Mexico Health Sciences Center, 1997

Ph.D.: (Clinical Psychology) Louisiana State University, 1995

M.A.: (Clinical Psychology) Louisiana State University, 1992

B.A.: (Psychology) Kent State University, 1988

RESEARCH INTERESTS

Post-traumatic stress disorder, eating disorders, child and family mental health, cognitive-behavioral therapy, multicultural considerations in assessment and treatment

PIVOTAL EVENTS

The interplay of mental health research, clinical practice, and training within culturally diverse communities had the most significant impact on my work as a scientist. Each of these dimensions informed priority areas in at least one of the others. My research helped structure and evaluate my work with clients, and provided a framework for testing proposed assessment and treatment models when working with trainees. Clients and trainees would regularly critique research and treatment models being implemented, and provide valuable input toward refining these approaches. Publication of these research findings and further consideration of their policy implications fostered an interest in health policy development, both on a national and international basis.

MENTORING & WORK/LIFE BALANCE

My mentoring experiences (i.e., both as a mentor and mentee) within academic, research, and clinical settings have been one of the highlights of my career. I have been fortunate to have worked with mentors who were dedicated to my professional growth in ways I was able to model and pass onto individuals I have mentored or supervised. The essence of the mentoring approach I found most rewarding was placing mentees' professional growth goals over and above an organization's needs, particularly when the two sets of needs are in conflict. Though organizational needs would be considered when developing a mentoring plan, they would not supersede mentees' professional development goals. Also worked through with the mentee would be the types of professional experiences that

OFFICE OF THE DIRECTOR

would be the best fit to accommodate significant life events in the mentee's life, and to foster a sense of balance.

Camelia L. Owens, Ph.D.

American Association for the Advancement of Science (AAAS) – Science & Technology Policy Fellow, Immediate Office of the Director

EDUCATION

Ph.D.: (Chemical Engineering) University of Delaware, 2004

Visiting Scholar: (Chemical Engineering) University of California–Santa Barbara, 2002–2004

B.S.: (Chemical Engineering) University of Maryland Baltimore County, 1999

RESEARCH INTERESTS

Biomedical, biotechnology, engineering education, control systems, health policy

PIVOTAL EVENTS

During one of the holiday breaks in graduate school, I was traveling back home and I ran into Dr. Freeman Hrabowski, president of the University of Maryland Baltimore County, in the airport. I remember talking to him about my career interests and experiences and stating how unsure I was of my next steps; he immediately reminded me of the Langston Hughes' poem, Hold Fast to Dreams. From that conversation in the airport, I decided to always dream big and to really take strides to realize those dreams. It is with that mentality that I have been able to contribute to the biomedical research enterprise in different capacities, mentor the younger generation of scientists and engineers to come and keep a positive outlook about the fields of science and engineering and what I will accomplish in the next phases of my career.

MENTORING & WORK/LIFE BALANCE

Throughout my life, I have had several mentors, many of which were not obvious to me. To me, it is important to have individuals in your life who can provide a balanced array of perspectives from within your peer group and outside of it. From the other viewpoint, I am always surprised to hear myself called a mentor, but I welcome the experience and opportunity to help other individuals craft their vision.

Balancing my professional responsibilities with my personal life is very difficult, but I am physically and mentally healthier when I do so it is a priority for me. Over the years, I have become very structured with my schedule so that I can maintain that balance. I try to remain flexible, as sometimes I do have to accommodate for tight deadlines or a personal emergency. Ultimately, I try to plan as best I can to enjoy the personal and professional segments of my life.

OFFICE OF AIDS RESEARCH (OAR)

Victoria A. Cargill, M.D.

Director of Minority Research and Clinical Studies, OAR

EDUCATION

M.S.C.E.: (Clinical Epidemiology) University of Pennsylvania, 1993

Certificate in Epidemiology: University of Pennsylvania, 1986

Andrew W. Mellon Fellow: (Clinical Epidemiology) Hospital of the University of Pennsylvania, 1982–1984

Residency: Peter Bent Brigham Hospital, 1978–1980

Internship: Peter Bent Brigham Hospital, 1977–1978

M.D.: Boston University School of Medicine, 1977

B.A.: (Biological Sciences) Mount Holyoke College, 1973

RESEARCH INTERESTS

HIV infection in African American women and heterosexual men and HIV risk reduction through community-based research

PIVOTAL EVENTS

I became seriously ill as a result of a needle-stick sustained while resuscitating a patient. The patient lived, but I almost died from hepatitis. The discrimination and cold isolation I experienced from my own peers while hospitalized uniquely sensitized me to the effects of disease-associated stigma.

MENTORING & WORK/LIFE BALANCE

Mentoring is essential and cannot be done "on the cheap." It requires commitment and time. Time is a precious and limited commodity, so to balance family and work I have a clear set of priorities. I keep this written down and visible as a reminder when stressed over too many demands.

INSIGHTS

I can think of three major events that shaped my career, although at the time these events were anything but challenges to manage. The first event came as a young intern as I wrote earlier. To be in the prime of one's health and to be suddenly and without warning desperately ill, with little voice in one's

care (even as a physician) and be treated as a pariah profoundly affected me. I had a unique insight into how it felt to be a desperately ill patient and with an illness that everyone feared. I could not have known that a mere 4 years later, I would be seeing some of the early cases of what was then called gay-related immunodeficiency disease (GRID) and what we now know to be HIV infection. I understood then, as now, in a very visceral way, the fear, the stigma, and the isolation of having an infectious disease that leads rational people to treat you in irrationally cruel ways. It is what underscores my passion and commitment to people living with HIV infection, as well as preventing the transmission of HIV infection in vulnerable populations.

The second big milestone in my career came when I was working as a physician in a neighborhood health center in the heart of Boston's Jamaica Plain. I had decided to live within the community I served, and as a result had an opportunity to witness first hand the racism, xenophobia, and classicism that affected many of our patients who were usually from Puerto Rico or Hispaniola and spoke little English. Another pediatrician and I were working late and in the process of discussing our patients, when we discovered that we were both seeing unusual episodes of otitis media. Instead of the usual pathogens, this was an unusual organism, and we ended up staying late, mapping the cases out on a large map of Jamaica Plain that was in the pediatrician's office. We quickly realized that our cases seemed to cluster around one particular city wading pool. We were able to pull the charts, demonstrate that the organism was indeed found in 90+ percent of our patients, and ultimately sampled the water and clinched the finding. I hadn't heard of John Snow then or didn't know much about epidemiology, but that was about to change! This "happenstance" led me to the University of Pennsylvania and the Andrew Mellon Clinical Epidemiology program.

The third milestone was the invitation to work with one of the best HIV prevention scientists around, Dr. Jeff Kelly. As a seminal researcher in HIV prevention, especially among men who have sex with men (MSM), I could not imagine having someone of his caliber take an interest in my HIV prevention work with inner city teens. But he did and under his tutelage, I was able to successfully compete for an R01 grant, and became a co-investigator with him on several projects. At his suggestion, I also became a member of an NIH study section, and learned a great deal about the funding and review process. He really walked with me every step of the way as I went from a junior investigator, to an R01-funded investigator, and ultimately a full professor of medicine, the second African American woman to do so in the history of the medical school where I was appointed.

I learned through these experiences and many since, that sometimes adversity really is the mother of creativity, and that no one path is 'the right way.' My advice is to make your own way, follow your passion, and find those who will advise and support you.

OFFICE OF BEHAVIORAL AND SOCIAL SCIENCES RESEARCH (OBSSR)

Margaret A. Chesney, Ph.D.

Senior Advisor to the Director, OBSSR (Former); Deputy Director, National Center for Complementary and Alternative Medicine (Former)

EDUCATION

Postdoctoral Fellowship: (Psychiatry) Temple University School of Medicine, 1976

Ph.D.: (Counseling-Clinical Psychology) Colorado State University, 1975

M.S.: (Counseling-Clinical Psychology) Colorado State University, 1973

B.A.: (Psychology and Sociology) Whitman College, Walla Walla, Washington, 1971

RESEARCH INTERESTS

I am involved in clinical investigations in the area of integrative or behavioral medicine including the role of the individual in the promotion of personal health; prevention of disease, and the potential for optimal management of health across the lifespan; and the role that lifestyle and behavior can play in health, development, and evaluation of behavioral strategies to enhance health and well-being, even in the face of serious health challenges. Much of my research has concentrated in three areas: women's health concerns, cardiovascular disease, and HIV/AIDS.

PIVOTAL EVENTS

A sense of purpose has been very important to my scientific success. When the HIV/AIDS epidemic raged throughout San Francisco, I was asked to evaluate an HIV/AIDS program. I approached my colleague, Thomas Coates, a highly esteemed scientist from the University of California, San Francisco (UCSF) to consult on the effort. He turned the request around, asking if I would consider joining him at UCSF and working together on the epidemic. About this event, I have often said, "It is rare that a colleague directly asks for help with their work." I was touched by his sincerity and the severity of the problem he confronted. I said, "Yes," leaving the Department I directed at SRI (formerly Stanford Research Institute) and began a career as a Professor of Medicine at UCSF, where I believe I made important contributions to research on HIV/AIDS, as well as coping with chronic illness, personal growth, and women's health.

MENTORING & WORK/LIFE BALANCE

It was balancing family responsibilities that opened doors for me with regard to exceptional mentoring. To care for my stepmother in the East, I sought training experiences that would allow me to work part-time in the Washington area and continue my work at UCSF. Fortunately, I was given an opportunity to work half-time with ORWH at NIH. The 2 years I worked at ORWH coincided with the Office's 10-year anniversary. In addition to working with the office on a 10-year evaluation, I found that working on the anniversary activities gave me unparalleled opportunities to meet and be mentored by some of the most outstanding women in science, health policy, and public service in the United States. As a mentor, I dedicate myself to helping other women convert the personal choices they make in balancing family and professional responsibilities into their own unparalleled opportunities.

INSIGHTS

I believe that strong leaders know their "true north." Personally, this seems particularly true of women leaders. For me, it has been very important to think about what I want to contribute; to think about my values, and use these as an "internal compass" as I have gone through my life. For me, my "true north" is promoting health and preventing disease. When I have been faced with career choices, I have consulted my "internal compass" and it has helped me to stay on the course that is most meaningful to me, personally. It is easy to become intrigued by a number of scientific domains, or to be persuaded by topics that are highly popular at the moment, and this can create forces that can pull a person off course. If we, as women, consult our own internal compass, which often balances a number of forces, and stay true to our personal values, we are more likely to make decisions that will advance our interests as well as help us continue on a journey that will be personally and professionally meaningful.

I was privileged to serve as the President of the Academy of Behavioral Medicine Research, the American Psychosomatic Society, and the Division of Health Psychology of the American Psychological Association (APA). I was honored to receive the Annual Award for Outstanding Contributions to the APA Division of Health Psychology in 1982 and 1986, the President's Award from the Academy of Behavioral Medicine Research in 1987, and the Charles C. Sheppard Science Award, from the Centers for Disease Control and Prevention (CDC) in 1999. Two recent events that have meant a great deal to me were being elected to the Institute of Medicine in 2001 and receiving an honorary doctorate in humanities in 2008 from my *alma mater*, Whitman College.

OFFICE OF COMMUNICATIONS AND PUBLIC LIAISON (OCPL)

Marin P. Allen, Ph.D.

Deputy Associate Director, OCPL;
Director of Public Information, NIH

EDUCATION

Ph.D.: (Public Communication) University of Maryland-College Park

M.A.: (Radio-Television-Film) University of Maryland-College Park

B.A.: (Theater/English) University of Maryland-College Park (with portfolio credits from The Corcoran School of Art)

RESEARCH INTERESTS

Communication theory and practice; science and health communication; public communication; leadership communication; film; political communication; health literacy; cultural competency; rhetorical communication; visual competency; and language. Dissertation: "The Guest–Host Archetypes. Rhetorical Constraint on the Modern American Presidency."

PIVOTAL EVENTS

My final science fair project in high school was a short, animated-the-old-fashioned-way — breath by breath — film called "Concepts of Infinity." I was allowed into the judging session because I was the only one who could run the equipment. The project won a special award as it didn't fit in any category. Later, in a Kodak student film competition, my film won an award that included cash and a new movie camera. The story was in the Washington Post, I was interviewed with my film on WETA-TV, and, importantly, I was invited to speak at the University of Oklahoma for the University Film Producers Association. I guess it was my earliest attempt, at age 18, to explain science.

I began my career on the faculty at the University of Maryland - College Park and later was a tenured, full professor and chair at Gallaudet, where for the last 2 years, I was on dual appointment directing university public relations. In between, I was a media specialist with the White House Conference on Aging. In 1990, I joined the NIH as the Communication Director for NIDCD. In the early years, I also headed planning, evaluation, and legislation. I have been at OCPL since 2004, and I still teach one course each year.

Over the years, I was fortunate to receive honors and awards including Phi Kappa Phi; Pi Delta Epsilon; Phi Alpha Pi; Teacher of the Year (1984–1985); Emmy Award (1988–1989); Emmy Award (1986–1987); CINE Golden Eagle Awards (1988, 1989); NIH Director's Awards (group) Biennial Report (2008) and (group) GWAS (2008); Achievement Award for Mentorship in the Partnership Program NIDCD; and NIH Merit Award NIH Discovery Young Scientist Challenge (2007).

MENTORING & WORK/LIFE BALANCE

My son, a reporter covering national politics, was born during my early teaching years and my daughter, a licensed attorney, was born as I finished my Ph.D. She has memories (and photos) of sitting in my lap while I wrote. My husband of 34 years is a consistently formidable intellect and a challenger of ideas. Laughter is our major family survival tool—and no one put too much emphasis on cooking! My lovely daughter-in-law has fallen in with us very comfortably.

INSIGHTS

I was the first woman hired as full-time faculty in my division at University of Maryland - College Park and am believed to be the first woman to teach television and film production full-time nationwide. It was pivotal that I was offered a teaching assistantship, allowing me to make the transition into the academy. I have had many mentors, most who demonstrated their leadership, some who shared knowledge, but all who insisted on excellence. I have been an official advisor to a great many mentees, and an unofficial sounding board to many more. I especially valued working on the NIDCD Partnership Program, benefitting young scientists from diverse backgrounds.

I had an outstanding division chair in my first job and an outstanding dean when I was a department chair. I was fortunate to have had extraordinary colleagues who became friends as we discussed—and still discuss—the meaning of what we do and how we might do it better. I had the challenging experience of learning sign language mid-career. Signing altered my understanding of words, images, and communication.

I serve as NIH representative to the U.S. Department of Health and Human Services (HHS) working group on health literacy and on literacy and communications working groups for Healthy People. Additionally, I serve on the NIH Nanotechnology Task Force Executive Committee. I speak and write about communication topics regularly. Translating science and health for a variety of audiences and in a variety of ways is an ever-enlightening experience.

Kim Pelis, Ph.D.

Speechwriter, OCPL

EDUCATION

Postdoctoral Fellowship: (History of Blood Transfusion and Shock) Wellcome Institute for the History of Medicine and The Science Museum, London, 1995–1998

Ph.D.: (History of Medicine) The Johns Hopkins University School of Medicine, 1994

B.A.: (Great Books and pre-medical studies) University of Notre Dame, 1985

RESEARCH INTERESTS

At NIH, my research follows the Director's speaking schedule. Solid research is the foundation of any good speech. Additionally, I continue to do medical historical research in my spare time. In particular, I will be writing a "biography" of typhus for Oxford University Press.

PIVOTAL EVENTS

My undergraduate mentor died shortly before my college graduation. It suddenly seemed far more important to devote my life to doing what I loved than to following a conventional career path. I decided to study the meeting-place of two loves – history and medicine – in graduate school. This had the desired effect, but ultimately set me on another type of conventional career path. The path did little to foster the kind of passion that initially brought me to study medicine from "alternative" (i.e., historical, social, and cultural) perspectives.

This is where mentoring again enters the story. It also provides a pivotal moment in my career. Initially, I had no appreciation for how historical research skills might be used outside academic history departments. Unconventionally placed mentors helped me understand these skills differently, appreciate them more fully—and wield them more effectively. In so doing, I've found myself on a career path that is not only intellectually fulfilling, but also plays a small part in helping NIH fulfill its mission: which is of profound cultural, social, and even historical, significance!

MENTORING & WORK/LIFE BALANCE

If only experience necessarily led to wisdom, I would be able to offer insightful tips and illuminating examples. In the real world, however, I can only confess that the challenges of balancing personal and professional responsibilities are both legion and constant. My personal approach is a work in progress; my estimation of its success varies wildly by the day (and

sometimes by the hour). Humor helps. As do supportive colleagues, friends, and family members. And, when it comes to cleaning the kitchen, I try to remind myself that my mother's standards are about as applicable to today's world as her old poodle skirts would be considered fashionable.

Sometimes, that even works for a few minutes.

OFFICE OF DISEASE PREVENTION (ODP)

Rashmi Gopal-Srivastava, Ph.D.

Director, Extramural Research Program, Office of Rare Diseases, ODP

EDUCATION

Staff Fellow: (Molecular and Developmental Biology) National Eye Institute, NIH, 1992–1994

National Research Council Research Associate: (Molecular and Developmental Biology) National Eye Institute, NIH, 1989–1992

Ph.D.: (Microbiology and Immunology) Medical College of Virginia, Virginia Commonwealth University, 1989

M.S.: (Biochemistry) Banaras Hindu University, India, 1982

B.S.: (Chemistry & Biology) Banaras Hindu University, India, 1979

RESEARCH INTERESTS

Genetic diseases, including cancer

PIVOTAL EVENTS

In India in the late 1960s, where equal education for women was available (it was not universally available), there was little effort in preparing women for scientific careers. Instead, women's careers primarily remained domestic. Studying home economics, arts, or social sciences and becoming a homemaker after getting married was the routine that I had seen many women around me go through. A pivotal event in my life was when my 6th grade science teacher understood my passion, dedication, and zeal for solving complex biological problems. Despite the challenges we both knew I would face, he encouraged me to take up science as a career and offered his help in persuading my parents. However, it was not needed, as my parents extended their full support.

MENTORING & WORK/LIFE BALANCE

Having the opportunity to mentor others is extremely important to me. I feel that my role as an individual, who has worked hard to achieve the dream, is to encourage others to do the same. As a graduate student and at the NIH, I mentored undergraduates on laboratory projects. Despite being busy with experiments and other professional responsibilities, I volunteered my time in teaching special science classes to elementary and middle school students. I have been invited to give lectures for Science and Math: Girls at the Cross Road of Success program, organized by the American Association of University Women, and am a member of the NIH Speakers Bureau, Office of Science Education.

Balancing personal life with professional responsibilities can be challenging, but is not impossible. After getting married in 1983, I followed my husband to the United States. I was lucky that my husband also encouraged me to pursue higher studies. During the last couple of years in my graduate school, I was pregnant with my first child and my husband had moved to another state. It was suggested that I get another Masters degree so that I could finish early and join my husband, but I was determined and joined NIH immediately after finishing my doctorate. I had to be very organized and I did two to three experiments at the same time so that I could spend time with my family during the weekends. My second child was born while I continued research, published several manuscripts, and became one of the more productive scientists in the lab. Later, I moved to the NCI as an extramural scientist where the opportunities for desk science existed and continued to balance my life, despite being very busy.

Our experiences shape our lifestyles. I firmly believe that life is to be lived to its utmost potential. I integrate the lessons I take from my personal life—playing the roles of wife, mother, friend, sister—with the roles that I play in my professional life such as a mentor, a colleague, and a leader. I am extremely passionate about both my worlds, and I use my experiences from each to benefit one other. I am a deeply involved parent, and I know that it is never good to mix in too much of one's professional life with personal life, but I allow my professional side to act as a vehicle for motivation for my two daughters. Being a working woman, we are given several tasks as we play the traditional and the dynamic roles in society. Though it is impossible to not let your work and life coincide with one another, setting limits as to how much they relate has been most efficient for me.

INSIGHTS

Though our society has progressed in a direction where women are respected in their professional lives substantially, I would still like to see more girls in the science and technology field. With growing need and career opportunities, I believe that contributions by women in the sciences are necessary and important. I know that there are still several setbacks in our

journey to achieving personal and professional fulfillment in these fields, but with a combination of motivation, determination, and passion, I believe that every girl who dreams of being a physician, scientist, engineer, or working with the health care system can do so.

Elizabeth A. Yetley, Ph.D.

Senior Nutrition Research Scientist, Office of Dietary Supplements, ODP (Former)

EDUCATION

Ph.D.: (Human nutrition) Iowa State University, 1976

M.S.: (Human nutrition) Iowa State University, 1970

B.S.: (Community nutrition) Iowa State University, 1963

RESEARCH INTERESTS

Nutrition, nutritional assessment, nutrition science, and public health policy

PIVOTAL EVENTS

Pivotal events in my career included strong family encouragement to pursue a scientific curriculum in college despite considerable discrimination against female scientists; a tough major professor who grilled me unmercifully on a weekly basis about my research decisions and activities; several managers within the Food and Drug Administration (FDA) who encouraged me to advocate and use sound science in regulatory decisions despite political pressures to do otherwise; and the freedom and encouragement from my supervisor and colleagues in the Office of Dietary Supplements to focus on areas of nutrition science and public policy interfaces in ways that were relatively novel to this office. Perhaps the greatest pivotal factor was the unfailing support that I received from my husband throughout my entire professional career and particularly at times when discriminatory actions and intimidations against me as a female professional became overwhelming.

MENTORING & WORK/LIFE BALANCE

In mentoring young scientists, I tried to instill the habit of incorporating scientific rigor into their science/policy activities. I also tried to help them in developing communication skills so that they could be advocates for science in hostile environments and be articulate enough to sell science to both scientists and non scientists. Several of these people have gone on to impressive careers in top academic and Federal agency management positions, in international science-based activities, and in significant research accomplishments. For subordinates who didn't have the talent to become leaders, I always tried to be honest but constructive in my communications. To this day, several former subordinates whom I had to inform that they would not be getting promotions still thank me for my helping them to lead productive careers in positions that they initially did not want, but for which time showed them to be ideally suited.

INSIGHTS

The career milestones and scientific accomplishments for which I am most proud include those that had significant impacts on public policy decisions. While at the FDA, I provided the leadership for developing and sustaining a rigorous scientific standard for food label health claims despite considerable political pressures to water these standards down. Against strong public criticisms from many fronts, I led the FDA's successful efforts to develop and implement a folic acid fortification program to reduce the risk of pregnancies affected by neural tube birth defects. The U.S. approach was subsequently adopted by the Canadian government and several European countries are likely to follow our lead in the near future. As lead of the U.S. delegation to a United Nations (UN)-sponsored international standard-setting body, I was successful in incorporating science-based approaches into dietary supplement and infant formula standards. Recognizing the significance of my impacts on science/policy interfaces, FDA appointed me as the first and sole "Lead Scientist for Nutrition." More recently, I have successfully supported the development of a World Heath Organization/Food and Agriculture Organization (WHO/FAO)-sponsored workshop and report on science-based models for safety standards for dietary supplements that is now being used by both developing and developed countries, including the U.S. Institute of Medicine.

Rebecca Bortz Costello, Ph.D.

Director of Grants and Extramural Activities, Office of Dietary Supplements, ODP

EDUCATION

Ph.D.: (Clinical Nutrition) University of Maryland, College Park, 1994

M.S.: (Biology/Physiology) American University, Washington, DC, 1980

B.S.: (Biology) American University, Washington, DC, 1976

RESEARCH INTERESTS

Prevention and treatment of cardiovascular diseases through diet and lifestyle; role of minerals in the etiology of disease and disease prevention; epidemiology and clinical trial methodology

OFFICE OF THE DIRECTOR

PIVOTAL EVENTS

My key to success has been multitasking throughout my professional career. Combining my early research career in clinical cardiology, first at Georgetown University and the Veterans Administration (VA) Medical Center in Washington, DC, and then later in private practice at the Washington Adventist Hospital, Takoma Park, MD, drove my desire for higher education and learning. These clinical and academic environments provided for my success as a researcher and student. My mentor at the VA and Adventist Hospitals challenged my curiosity and quest for knowledge by supporting both my thesis and dissertation projects. I thrived on the excitement of initiating and recruiting for clinical trials, collecting the data, and publishing and presenting the results at national meetings. At times I was working at both institutions and commuting back and forth to classes at the University of Maryland. Returning to school for my doctorate in 1987, I was very focused and had a wealth of real life experiences to draw upon.

MENTORING & WORK/LIFE BALANCE

In the short tenure I had as a teaching assistant at American University and at the University of Maryland, as well as teaching Nutrition at Columbia Union College (1994–1996), I delighted in sharing experiences and lessons with my students. Similarly, I have mentored a number of graduate students during my tenure at Office of Dietary Supplements (ODS) on an array of projects and seen them accelerate on their career paths. My husband has been most supportive of my dual role as researcher and student, as we both worked full-time to meet the demands of our imposed schedules. Everything just seemed to fit together and fall in step—step-children visiting for vacations and the summer, adoption of a 6-year-old daughter when most couples were celebrating the end of their child-bearing years, and the return to school for my doctorate.

Mary Frances Picciano, Ph.D.

Senior Nutrition Research Scientist, Office of Dietary Supplements, ODP

EDUCATION

Ph.D.: (Nutrition) The Pennsylvania State University, 1974

M.S.: (Foods and Nutrition) The Pennsylvania State University, 1970

B.S.: (Biology) St. Francis College, Loretto, PA, 1968

RESEARCH INTERESTS

Nutrition during growth and development, maternal nutrition (lactation), infant nutrition, early childhood nutrition, nutritional assessment, trace mineral metabolism, folate metabolism

PIVOTAL EVENTS

As an undergraduate student in biology, I read an article on nutrition as a means of combating disease and was stimulated to pursue nutrition in graduate school. I became interested in human milk as a graduate student and was fascinated with its unique properties and this fascination guided my research career for over 30 years. I had the privilege to work with two outstanding women during my graduate training and they encouraged me to pursue a career in academia. They were not only fabulous scientific models, they also were models on how to best balance a career and family life.

MENTORING & WORK/LIFE BALANCE

The main supporting individuals in my professional career were my parents and my husband. They always encouraged me to pursue whatever path I chose and provided substantial help when I needed it most. I have had the opportunity to mentor a number of graduate students during my career and follow their careers in academia, and the public and private sectors with pride. In my present position, I am responsible for training and career development activities and am continually impressed with the substantial weight keen mentoring imparts on career choices and sustained professional achievement.

Susan C. Rossi, Ph.D.

Deputy Director, Office of Medical Applications of Research, ODP

EDUCATION

M.P.H.: (Public Health) The Johns Hopkins University, 1994

Ph.D.: (Chemistry) Dartmouth College, 1987

B.S.: (Microbiology) San Jose State University, 1982

RESEARCH INTERESTS

Evidence-based medicine (EBM), cancer prevention, cancer screening, chemical carcinogenesis

PIVOTAL EVENTS

The critical importance of using a proper control group has been a central mantra for the work I have been involved with as a student or as a scientist. Whether one is working in a laboratory situation doing in vitro research, or alternately, involved in studies with human participants, the control is equally important as the test group. I was surprised when I moved from the bench doing basic science to clinical medicine how often a control group is not used in medical research, for example case series and case reports. EBM came about, in part, due to the difficulty of discriminating between well-conducted clinical research and studies that, although interesting, should only be used for hypothesis generation. I have to acknowledge my

first research advisor, the late Professor Karen Wetterhahn, for driving this point home when I started my scientific career.

MENTORING & WORK/LIFE BALANCE

I think of work/life balance as an admirable goal that I can't claim to have achieved. I am 52, married, with a 20-year-old daughter in college. When things got chaotic, and they did, I would just try to keep some forward momentum on all fronts while acknowledging that not all aspects of your life can be high priority at the same time.

Regarding mentoring, I have had the privilege of being mentored by some outstanding individuals, including Karen Wetterhahn, Michael Topal, John Gohagan, Sudhir Srivastava, Cherie Nichols, and Barry Kramer. Transmitting strong core scientific principles while allowing the person I am mentoring to develop as an individual and be ready for their own professional journey is what I hope to accomplish as a mentor.

OFFICE OF EXTRAMURAL RESEARCH (OER)

Norka Ruiz Bravo, Ph.D.

Deputy Director for Extramural Research, NIH; Director, OER

EDUCATION

NRSA Postdoctoral Fellowship: (Physiological Chemistry) Johns Hopkins University, 1983

NRSA Postdoctoral Fellowship: (Biochemistry and Molecular Biology) The University of Texas

M.D. Anderson Cancer Research Center, 1983–1986

Ph.D.: (Biology) Yale University, 1983

M.Phil.: (Biology) Yale University, 1981

B.A.: (Biology) Goucher College, 1975

RESEARCH INTERESTS

I am a scientist by training and at heart, a cell and developmental biologist. For many years, I have served as a science administrator and manager. I enjoy the big picture perspective. In my current position, I am rewarded by fostering a policy environment that promotes interdisciplinary approaches to problems, combining different areas—scientific and administrative—in ways that lead to novel outcomes.

PIVOTAL EVENTS

Rather than focus on specific events, I'd prefer to highlight categories of events that have positively affected my career as a scientist. One category is "movement." My first move was at the age of 14, from my home in Peru to boarding school in Florida. During my 18 years at the NIH, I have served in more than a dozen positions. I am always ready to embrace new challenges. Another category is "variety." I have served in various roles in several Institutes and Centers. The different "cultures," i.e., differing priorities and ways of accomplishing tasks, offer unique "laboratories" for ways to advance science. And the final category is "opportunity." When an opportunity has presented itself, I have always considered it.

MENTORING & WORK/LIFE BALANCE

I have been presented opportunities by and studied and worked with amazing people. I believe in affording others such opportunities and challenges and am committed to doing my part to develop the next generation of science professionals. This is an integral part of good science and good science management.

My career and family are all part of my life, and both are rewarding. I take time for adventures, such as my husband's and my recent Mt. Kilimanjaro climb. I also take time to read, bake, and do household chores. I derive satisfaction in such activities — a sense of closure that managing science really does not easily afford. I exercise regularly and make sure I attend at least one exercise class a week, more when possible. And when I have the chance, I relish hiking and bird watching. I have found, at least in my case, that with a bit of planning, life has a way of balancing itself.

INSIGHTS

From my laboratory work early in my career through my various roles at the NIH in administering and managing the conduct of research, I have always felt both challenged by and, at the same time, comfortable in the scientific milieu. I think this duality comes from the fact that science is about the business of learning. I love being challenged, and I am always on the lookout for the new. I am also comfortable in knowing that in taking this approach, I will always be learning.

OFFICE OF THE DIRECTOR

Sally J. Rockey, Ph.D.

Deputy Director, OER

EDUCATION

Postdoctoral Fellowship: (Entomology) University of Wisconsin, 1986

Ph.D.: (Entomology) The Ohio State University, 1985

M.S.: (Entomology) The Ohio State University, 1982

B.S.: (Zoology) The Ohio State University, 1980

RESEARCH INTERESTS

My research was focused on the physiological, biochemical, and ecological basis of insect reproduction and development. My expertise now is science administration.

PIVOTAL EVENTS

As a child, I loved animals. When I found you could actually study them, I was a goner. Late in my undergraduate career, I changed course from zoology and switched to entomology, much to the puzzlement of my parents. The next big change was accepting a position in research administration with the U.S. Department of Agriculture. I was substantially altering what I had envisioned would be my career—becoming a professor and researcher—but I knew that I would likely not return to the bench. However, something weighed on me as I made the decision and has stayed with me—my belief that a government career not only would be rewarding for me professionally, but also could have an impact on the broader direction of science and help other researchers reach their aspirations. My most recent change was in coming to the NIH after 19 years with the U.S. Department of Agriculture (USDA). As with the prior changes, it has proven to be the right move.

MENTORING & WORK/LIFE BALANCE

A high school teacher inspired me to study biology. While I never became a professor as I once had planned, my roles as Chief Information Officer, SES executive, research administrator, scientific misconduct liaison, supervisor, and communicator have afforded me many mentoring opportunities. Because of my diverse experiences and because I became a senior manager at a young age, I have had a number of young people turn to me for help in learning about becoming a leader. I guess you would say I did become a teacher of sorts.

My motto is work hard and play hard! My mantra is to put family first but to accomplish the job so that this is possible. My husband and I have an 18-year-old son and so many outside interests and friends that I can't wait to get home every day to enjoy making or listening to music, dealing a hand of cards, reading, swimming, or just relaxing.

INSIGHTS

A career in science administration is rewarding in myriad ways, particularly in that your work reaches many people and has an impact on their work and lives. A government employee places public service at the forefront of what she or he does every day. I am glad I made the choices I did. I feel my contribution is significant to biomedical research because like a bench scientist, I aspire to understand how things work and try to find creative approaches to make them work in new and better ways. I believe my efforts in turn have a positive impact on my staff and the people we serve, both in the scientific community and the global community.

Sally Ann Amero, Ph.D.

NIH Review Policy Officer,
Office of Extramural Programs, OER

EDUCATION

Research Associate: (Biology) Washington University, 1984–1987

Research Associate: (Biology) University of Virginia, 1980–1984

Research Assistant: (Chemistry) University of Virginia, 1979–1980

Ph.D.: (Developmental Biology and Biochemical Genetics) West Virginia University, 1979

B.S.: (Biology) Indiana University of Pennsylvania, 1974

RESEARCH INTERESTS

My former research interests focused on the mechanisms whereby DNA is folded into chromosomes, and certain stretches of DNA are either hidden or exposed by proteins that bind to them. These structural mechanisms are fundamental for proper replication of DNA and transmission of chromosomes to daughter cells, and for correct expression of genes in the right tissues and at the right time.

PIVOTAL EVENTS

The most important, pivotal event in my professional career was my negative tenure decision. This godsend in disguise served as the springboard that led me to science policy, which is much more fulfilling than my former research career and suits my skills and temperament. It is important to note, however, that my training and experience in research were necessary precursors for the job that I have now.

MENTORING & WORK/LIFE BALANCE

The work/life balance is an issue that most professional people, not just scientists, work to resolve. For me, an important life lesson was learning to place boundaries on the amount of my life that I am willing to devote to my professional responsibilities. In part, this meant finding a career in which I could be successful without sacrificing the personal responsibilities and activities that are important to me.

Patricia Brown, V.M.D.

Director, Office of Laboratory Animal Welfare, OER

EDUCATION

Postdoctoral Residency and M.S.: (Laboratory Animal Medicine) Pennsylvania State University, The Milton S. Hershey Medical Center, 1982

V.M.D.: University of Pennsylvania, School of Veterinary Medicine, 1978

B.S.: (Animal Science) Pennsylvania State University, 1974

RESEARCH INTERESTS

Laboratory animal medicine and animal welfare policy

PIVOTAL EVENTS

My mother was raised on a farm in Pennsylvania, sparking her pursuit of a science education degree. Because of World War II, she did not teach, but worked in a Merck laboratory testing mosquito repellants. In today's times, I believe she would have pursued a medical degree instead of being a stay-at-home, 1950's mom. Her daily challenge to me and my sisters was to be the best students and to not be dissuaded in our pursuit of knowledge. My oldest sister is a Ph.D. in nutrition and behavior while my younger sisters are a computer scientist and botanist. My attachment to our pets and our summer visits to my grandparents' farm were the fuel that pushed me to pursue veterinary medicine. "Talking to the animals" came naturally to me and I enjoy the unique challenges of comparative biology and laboratory animal medicine. Working at NIH has given me many opportunities to support and advance the health of humans and animals through scientific discoveries in basic and translational research.

MENTORING & WORK/LIFE BALANCE

Working with pigs, mice, and monkeys when you are pregnant has its own set of challenges. I was blessed to have a supervisor with four young daughters who was very supportive of my need for a flexible work schedule during my first son's early years. I was also extremely fortunate in that my husband chose to give up his career as an air traffic controller to stay at home with our boys after our second son was born. This allowed me to return to my career as a veterinarian at NIH and an officer in the Commissioned Corps of the U.S. Public Health Service. At the time of this role reversal in the early 1980s, it was a quite unheard-of practice. As a result, his bond with his sons is very special to this day.

Sherry L. Mills, M.D.

Acting Director, Office of Extramural Programs and Senior Policy Advisor, OER

EDUCATION

M.P.H.: (Epidemiology) The Johns Hopkins School of Hygiene and Public Health, 1987

Residency: (Preventive Medicine) The Johns Hopkins School of Hygiene and Public Health, 1986–1988

Internship: (Internal Medicine) Providence Hospital, George Washington University School of Medicine, 1984–1985

M.D.: University of Cincinnati, College of Medicine, 1984

A.B.: (Human Biology) Brown University, 1978

RESEARCH INTERESTS

My primary research interests were in social and behavioral sciences applied to cancer control. They included primary and secondary prevention in cancer control, advocacy for diverse populations, and tobacco control among diverse populations, including minority groups.

OFFICE OF THE DIRECTOR

PIVOTAL EVENTS

As a first-year medical student, I was fortunate to hear a presentation from Dr. Helene Gayle, who was then an M.P.H. candidate at Johns Hopkins, in which she described careers in public health. Her presentation was pivotal in my decision of a medical specialty: preventive medicine and public health. I appreciated most that through a public health career, populations, not just individuals, can be affected. Discovering a career in public health expanded the breadth of my career in medicine: direct patient care, scientific research, administration, and policy.

MENTORING & WORK/LIFE BALANCE

Balancing professional and personal commitments is a work in progress. Demands in one's professional and private life continuously change. It is essential that a working wife, mother, and daughter cultivate and nurture formal and informal networks to preserve balance. My role models and mentors have helped me work toward achieving balance. Some of the best advice I received: Don't live in regret; make decisions, act on them, learn from them; if they are good ones, repeat them; if they are not good, learn from them and move on.

OFFICE OF INTRAMURAL RESEARCH (OIR)

Arlyn Garcia-Perez, Ph.D.

Assistant Director, OIR

EDUCATION

Postdoctoral Fellowship: (Kidney & Electrolyte Metabolism), NHLBI, NIH, 1984–1987

Ph.D.: (Biochemistry) Michigan State University, 1984

B.S.: (Cell and Molecular Biology) Massachusetts Institute of Technology (MIT), 1979

RESEARCH INTERESTS

Osmotic regulation of gene expression and osmotic stress, stress-induced regulation of gene expression, regulation of gene expression, osmotically active organic solutes (osmolytes), renal molecular physiology

PIVOTAL EVENTS

Having left Cuba with only their education to count on, my parents always encouraged me to pursue the highest level of education possible and reinforced that I could do whatever I set my mind to do. My sister always led by example academically and I was exposed to MIT because she was a sophomore there when I first visited her as a freshman in high school. Having always loved science and math, I chose MIT for my undergraduate education. Although I thought I would go into medicine, at MIT, I was exposed early on to research and decided that I felt most compelled by the discovery aspect of science. Graduating from MIT was a life-changing event because it was such a test of character to achieve this that I knew from then on I could really do anything I set my mind to.

MENTORING & WORK/LIFE BALANCE

I have been blessed with diverse scientific and administrative mentors whose guidance has been critical throughout my career. Thus, I learned early on the value of outstanding mentors and I have tried to be one as well. It has been enormously gratifying to be a mentor and see my own lab trainees become capable scientists, to know that I had a positive impact on their careers. As a scientist administrator, I've also had the joy of creating new training programs (such as the NIH Academy) and mentoring more than just in my own lab. The discovery of talented youth whom I encourage to become future physician–scientists is exceedingly rewarding. Among the aspects that we always discuss is work–personal life balance. My philosophy on that is summarized by "there's a time to sow, and a time to reap." The balance must be dynamic per stages in one's career and personal life.

INSIGHTS

The best general advice I can give is to continuously examine yourself, getting to know what you truly like and dislike along your career path. Make sure that your dreams and aspirations are truly yours and not someone else's. Exceptional opportunities tend to arise suddenly and with a very short decision-making period. If you know yourself, you can quickly decide whether to pursue an opportunity. Also, always maintain a positive attitude, looking at discouraging events or circumstances as a temporary phase. Analyze why something is not working and find alternate paths.

Joan P. Schwartz, Ph.D.

Assistant Director, OIR

EDUCATION

Ph.D.: (Biological Chemistry) Harvard University, 1971

A.B.: (Chemistry) Cornell University, 1965

RESEARCH INTERESTS

Neurotrophic factors; Glia

PIVOTAL EVENTS

The support, and unquestioning assumption, from my mother as well as male teachers and professors, starting with my biology teacher in high school, that I could be any kind of scientist I wished.

MENTORING & WORK/LIFE BALANCE

I have had a number of mentors, all of whom were balancing family and career, and all of whom offered different models for how to do so. In the end, no one can tell a person or couple what to do; they can only offer a set of potential strategies for consideration. The most important thing is the dialog between the spouses or partners so that both feel they are being heard and having input. Flexibility, open communication, and the ability to compromise are key. In our careers, my spouse and I had constantly to respond to a new situation in which one of us was making a decision that would impact both of us. Generally, the other one unexpectedly ended up in a better situation; so be open-minded!

INSIGHTS

The Vietnam War and the Doctor Draft, unfortunate as they were, resulted in our spending our professional careers at the NIH and we have never regretted it. I became tenured, set up my own lab and was happily doing neurobiology research for many years. In 1994, the opportunity to work with the Deputy Director for Intramural Research and the Office of Intramural Research came along—after much hesitation, I tried it and discovered myself in a position where I could have an impact on the lives of other women scientists at the NIH. Many scientists want to keep their noses in the lab and don't appreciate how rewarding "administration" or "policy" can be—it becomes your chance to make changes to the policies you are always complaining about, changes that affect not just you, but your fellow NIH scientists. So my recommendation is to seize the opportunity when it is offered—try it and you might discover you truly enjoy it and find it rewarding!

Bonny Harbinger, Ph.D., J.D.

Deputy Director, Office of Technology Transfer, OIR

EDUCATION

J.D.: Georgetown University Law Center, 1997

Postdoctoral Fellowship: (Clinical Psychology) Naval Regional Medical Center, San Diego, 1983

Ph.D.: (Clinical Psychology) United States International University, 1982

M.A.: (Psychology) United States International University, 1979

B.A.: (Social Work) Tel Aviv University, 1976

RESEARCH INTERESTS

I am currently interested in visual analytics.

PIVOTAL EVENTS

There were two pivotal events. The first was my mentor advising and, in fact, insisting that I continue my post-graduate education and apply to graduate schools in the United States. The second was the AIDS epidemic that started in the 1980s. Because there was so little known about the disease and its manifestations, I became involved in research on both the neuropsychiatric manifestations of the disease as well as treatment studies being conducted in San Diego. Both these events provided me with the education and expertise needed to become one of the pioneers in treating the psychological aspects of AIDS in Southern California.

MENTORING & WORK/LIFE BALANCE

Finding a good mentor is both extremely important and difficult for most people. The search, however, is well worth the effort, as learning from someone else's experience and finding a guide are invaluable. While I try to mentor and support the young women in my office, I struggle with finding a mentor of my own. For me, a good mentor is someone whom I personally admire, who has traits I wish to emulate, and who can serve as a guide and advisor in my current job as well as assist me with career development. I look for someone who can teach me from her life experiences and knowledge. Once the relationship is established and the mutual trust and respect built, the mentoring experience can be one of the richest in a person's working career.

OFFICE OF THE DIRECTOR

Yolanda Mock Hawkins, Ph.D.

Director, NIH Academy,
Office of Intramural Training and Education, OIR

EDUCATION

Postdoctoral Fellowship: (Cellular Senescence) National Institute on Aging, NIH, 1994–1998

Ph.D.: (Cellular & Molecular Biology) Meharry Medical College, Nashville, TN, 1994

M.S.: (Biology) Texas Southern University, 1990

B.S.: (Biology) Fisk University, Nashville, TN, 1986

RESEARCH INTERESTS

Signal transduction pathways and the role of protein kinase C

PIVOTAL EVENTS

Science, math, and engineering have always been my passion. I recall at an early age trying to make a candy machine from a shoe box; unfortunately, I could not master how to control the dispensing mechanism. Another time, while spending the summer at my grandparents, along with some other girls, I attempted to make a go-cart from spare pieces of wood and juice containers. Needless to say, our go-cart never worked like the ones built by the boys. These early experiences did not discourage me, but further fueled my curiosity. I am thankful for having parents who supported my interests and allowed me to participate in things like a summer enrichment program for junior high students at Rice University and also volunteer in Central America for the summer. The summer before entering graduate school, I volunteered in the lab of an investigator who would later serve as my department chair and graduate school dean. While volunteering in his lab, I observed female graduate students conducting experiments and, most importantly, working overnight taking samples from rats at various time points. After observing this, I knew that a Ph.D. graduate program was for me.

MENTORING & WORK/LIFE BALANCE

During the latter stages of my postdoctoral training, I decided I wanted to try science administration. After completing my postdoctoral training, I transitioned into extramural and intramural science administrative positions. I have been fortunate to be able to use my science training and background in my administrative positions. I think being trained as a scientist has taught me how to plan, be organized, be detailed-oriented, and always have a backup plan. Balancing a career and husband is a constant challenge. I make an effort to always submit the best product because it represents me. I am thankful for having a husband that supports my interests.

Patricia Munse Sokolove, Ph.D.

Deputy Director,
Office of Intramural Training and Education, OIR

EDUCATION

Ph.D.: (Biology)
Harvard University, 1970

A.M.: (Biology)
Harvard University, 1968

A.B.: (Biology) Radcliffe College,1966

RESEARCH INTERESTS

My research interests include mitochondrial bioenergetics, liposomes as model membranes, and Ca2+ transport. Please note, however, that I closed my laboratory in 2001 and have been exclusively an academic administrator and AAAS Science & Technology Policy Fellow since.

PIVOTAL EVENTS

I once heard Rita Colwell, former Director of the National Science Foundation (NSF), attribute her success as a scientist to her father and her husband. Although I am far from being as successful as Dr. Colwell, I heartily agree. My father always made it perfectly clear that I could do anything my younger brother could do, reinforcing this implicitly by including me in playing catch with a football or a softball in the evenings after supper. Both my ex-husband and my current husband have been willing to take on responsibilities for children and cooking that seriously decreased the pressure I experienced to get everything done. You can't pick your father, but you can help your male partner to encourage his daughters to believe in themselves and test their limits while being a true partner in running your home.

MENTORING & WORK/LIFE BALANCE

Combining family and professional responsibilities helps one to maintain balance. There is nothing like coming home to a small child to put the stresses of the work day into perspective. Conversely, having professional duties to absorb some of one's zeal helps keep a parent from devoting a smothering amount of energy to her family. So, I see "balancing" (the verb) as contributing to "balance" (the noun). In terms of meeting both personal and professional goals, I cannot recommend organization and advance planning (plus a dose of flexibility) too highly. Creating weekly menus and shopping only once a week is a big time saver, as is cooking with an eye to creating

leftovers. Remembering that what looks like housework to an adult can be play to a child is also useful; shop and cook and do laundry with your kids. You complete necessary tasks while spending quality time with your children.

OFFICE OF LEGISLATIVE POLICY AND ANALYSIS (OLPA)

Lenka Fedorkova, Ph.D.

Legislative Analyst, OLPA

EDUCATION

Ph.D.: (Neuroscience)
Kent State University, 2003

M.S.: (Physiology)
Youngstown State University, 1998

B.S.: (Pre-Medical)
Youngstown State University, 1996

RESEARCH INTERESTS

Neuroscience, specifically chronobiology, and science policy

PIVOTAL EVENTS

Throughout my early education, there were few role models that I could look to. There were, however, multiple factors that created a rich learning environment filled with opportunities to learn about nature, the universe, and all living systems. Beginning college-level equivalent mathematics, chemistry, physics, and biology courses in fifth grade of elementary school back in Czechoslovakia provided me with a solid foundation to draw from for years well into my higher education in the United States. The curiosity for learning, the recognition of the importance of knowing about our natural environment and our own bodies and minds were the product of influences from educators in my family and overall societal values that emphasized science education.

MENTORING & WORK/LIFE BALANCE

I had not fully appreciated the value of mentoring until later in my graduate studies, when I recognized a gap in my support network. I had many career questions my family could not help with due to their unfamiliarity with the U.S. system. I sought out both female and male instructors who I felt were giving of their time and interested in discussing my professional development decisions. There were several, mostly informal, councils that figured prominently in my professional development.

Simultaneously, while also fulfilling the role of a mentor as a teaching assistant to my students, I became involved with the Association for Women In Science in Ohio and helped organize many public lectures and weekend biology workshops to get young girls excited about science. As I considered my professional journey, it was encouraging to meet working women with families. I knew I could do both successfully—my mom did! Busy times at work come and go, and especially when I used to travel a lot, I carved out time during weekends to recharge and stay connected with family and friends.

OFFICE OF PORTFOLIO ANALYSIS AND STRATEGIC INITIATIVES (OPASI)

Deborah Guadalupe Duran, Ph.D.

Chief, Systemic Assessments Branch, Division of Evaluation and Systematic Assessments, OPASI

EDUCATION

Ph.D.: (Social Psychology, minor in Statistics & Research Design)
University of Denver, 1995

M.S.: (Computers, minor in Mathematics)
Nova University,
Ft. Lauderdale, FL, 1987

B.S.: (Secondary Education: social science, math, biology, and health)
University of Nevada,
Las Vegas, 1981

RESEARCH INTERESTS

Assessment of scientific organizations, adaptive evaluation of research and development programs, cultural aspects of health coping, cancer prevention and coping practices in Hispanic women.

PIVOTAL EVENTS

Perhaps the most pivotal event that affected my success as a scientist was the advice to select an advisor who was established and successful. In doing such, my advisor supported my interests and enabled me to conduct my own research. I examined the cultural affects of health behaviors and the mistreatment of culturally manifested symptoms in western medicine. This line of research established me as the first scientist to explore somatic complaints in a cultural context, which resulted in an American Psychological Association award for innovative research to advance a field. I proceeded to become a principal investigator of two cancer projects focused on Hispanics my first year post doctorate. The success of these two awards moved me into government service where I began the study of science projects and programs' performance. Toward

the end of the learning curve, scientific thinking prompted questions for more appropriate ways to assess scientific performance and the performance of science organizations. These questions initiated the quest for a new field of adaptive performance assessments.

MENTORING & WORK/LIFE BALANCE

A mentor sees value in you and connects your assets to a significant activity. This simple act makes a difference in a career, as it helps the mentee know what she can do and provides support to take risks and to be innovative. I can unequivocally state that I would not be a scientist today if it were not for my mentors, those who took special interest in me. Simultaneously, each mentee fostered my growth as well. In particular, a female mentor helped me to understand why I acted and thought differently than those around me. She taught me how to integrate my culture with the culture of science and government. Her care and guidance helped me to understand my own cultural differences and to value my skills, insights, and abilities. Fortunately, I have been able to pass these gifts onto others. The ability to pass gifts to others comes from self-awareness that recognizes both self-need as well as self-value. Although the value of self is often derived from being successful at what we do, self-awareness comes from the balance of not doing or doing different activities other than work. Sports, art, dance, and relationships with family and friends provide a balance to the stress of my work life.

INSIGHTS

Perhaps the key to my success is my mother, who told me from early childhood that I was very capable, so she consistently encouraged me to push through our poverty and deprivation in order to contribute to the greater good. From the early days of school through the early days of my career, I had key voices that saw something in me that I did not see in myself, and opened doors that I never knew existed. For instance, I was persistently recruited to play school sports even though it was counter to my peers in the inner-city environment. Sports turned into a coping mechanism that countered the violence and drugs in my neighborhoods and provided me scholarships through college. With this event and others, elders led me to the doors, but I had to have the courage to walk through. Support from others is critical to advance; yet, you are the one who has to make something of the opportunities given you. It is never anyone else's fault that you did not persevere. Although success may seem improbable because there are so many unknowns, the journey means you are never stagnate and the process often unravels unplanned successes. You have to participate with intention.

Elizabeth L. Wilder, Ph.D.

Acting Associate Director, OPASI; Acting Director, Division of Strategic Coordination, OPASI

EDUCATION

Postdoctoral Fellowship: (Developmental Biology and Genetics) Harvard Medical School, 1990–1995

Postdoctoral Fellowship: (Molecular Biology) Northwestern University, 1989–1990

Ph.D.: (Biochemistry and Molecular Biology) Northwestern University, 1989

B.A.: (Chemistry) Hendrix College, 1984

RESEARCH INTERESTS

As a postdoctoral fellow and faculty member, my research interests were focused on signal transduction pathways during development, with an emphasis on how extracellular signals guide cell movements during organogenesis in Drosophila. Looking to broaden the landscape of my daily scientific pursuits, I came to the NIH as a program director to oversee extramural research in the area of kidney development for NIDDK. This later expanded to research covering basic biology of polycystic kidney disease and acute renal injury. I currently enjoy thinking about a wonderfully broad range of science via the NIH Roadmap.

PIVOTAL EVENTS

The first pivotal event that had enormous impact on my success was the first talk that I gave at a major international meeting. My thesis advisor coached me, and it was incredibly valuable, since I learned the elements of a good, brief talk. Good speaking skills have been vital for success that I have achieved. The second pivotal event was obtaining a faculty position. Although I ultimately decided to pursue a non laboratory career path, being on the faculty at a major academic center was critical for learning how to develop and lead a research program. A third major event was being recruited to the NIH as a program director/program officer of extramural research programs at NIDDK. This was a great job for me because it allowed me to think about the bigger picture of science as opposed to the intricacies of an individual lab. I learned the role of NIH scientific staff in tracking a field of science, understanding research needs of the community, and how to facilitate research in the area through program management. NIH program staff can play an incredibly valuable role in shaping a field of science as well as assisting individual investigators. I was fortunate in being recruited to the NIH as the NIH Roadmap was

being developed. I was very interested in promoting increased interactions among scientists of differing disciplines, and the Roadmap seemed a perfect way to pursue this.

MENTORING & WORK/LIFE BALANCE

I have benefited from several outstanding mentors, both in the early stages of my training as well as at the NIH. I feel strongly that guidance from people who have taken a path before is the most instructive way to learn. Mentoring involves not simply teaching someone how to do something, it involves helping someone learn how to think productively about a particular issue and how to approach problems. It involves knowing enough about a person's interests and abilities to be helpful as they plot a career path. I take my role as mentor seriously and therefore attempt to listen first. Mentoring should absolutely be tailored to the recipient, so there are few points that I emphasize to all whom I mentor. One issue that I do emphasize, however, is the encouragement of life outside the lab or office. Each person's pursuit of a life outside the lab or office is unique, but an almost universal truth is that too much emphasis on work reduces energy, creativity, and contentment levels. My own sense of balance is maintained through my family and personal relationships, exercise and outdoor activities, and community efforts.

INSIGHTS

My primary insight into scientific careers, regardless of whether they occur in the lab, as a director of extramural programs at the NIH, in science policy, patent law, as a clinician, or anything else, is that smart, energetic people do well. "Smart" encompasses not only native intelligence, but training: one needs to be trained to think as a scientist, to write, to communicate effectively in person, and to do the specifics of any particular job at hand. Almost anyone can be trained, given the right mentors. The key element is passion: if you bring a keen interest to the job and energy to make things happen, interesting things will happen.

R. Lucille Roberts, Ph.D.

Lead Scientific Portfolio Analyst, Portfolio Analysis and Scientific Opportunities Branch, Division of Resource Development and Analysis, OPASI

EDUCATION

Staff Fellowship (Endocrinology of Parental Behavior): NICHD, NIH, 1999–2001

Pharmacology Research Associate Training (PRAT) awardee: (Behavioral Pharmacology) NIGMS, NIH, 1997–1999

Smithsonian National Board Fellow (Reproductive and Social Behavioral Development): National Zoological Park, 1994–1996

Ph.D.: (Zoology) University of Maryland, 1994

M.S.: (Zoology) University of Maryland, 1991

B.S.: (Zoology) North Carolina State University, 1989

RESEARCH INTERESTS

Behavioral neuroendocrinology of social behavior, parental behavior and monogamy; etiology of child abuse, and child abuse prevention and intervention; neurobiological underpinnings of addiction and aggression

PIVOTAL EVENTS

As a college student, my career goal was to become a college professor in biology or zoology, so that I could serve as a positive role model for other students as my professors had been for me. My postdoctoral training at the National Zoological Park was important to my career, because the Zoo attracts thousands of visitors from all over the world who are eager to learn. I was able to teach college courses in the local community and continue the research that had been my full-time occupation during graduate school. I also had the opportunity to engage in public outreach and interact with educators and researchers from all over the world. I learned that education is sometimes more effective in nontraditional contexts. I decided that a career in civil service might be the most rewarding for me, where my talents can serve a mission that benefits the wider public.

MENTORING & WORK/LIFE BALANCE

I mentored college students as a postdoctoral student and during my research position at NICHD; I still provide advice to some of those students on balancing family with career and choosing their own best career path. In my current position in OPASI, the young women who seek mentorship are often just beginning their careers in science administration; the challenges and benefits offered by the field of grants administration are very different from those in their former laboratory environment, and the questions often center upon how to best navigate on their new career path. I recently also have realized that another valuable way I can serve as a mentor is by working with younger girls who are coping with adolescence and trying to define the person they want to become. Girls need to interact with adults who exemplify how they can achieve whatever goal they set for themselves. I serve as a Girl Scout leader and youth advisor at my church. I also support the interests and endeavors of my own two children and my husband, who works full time while also finishing his doctoral degree in environmental engineering. We each make family our top priority, and everyone helps out to make it all work.

OFFICE OF THE DIRECTOR

Madeleine F. Wallace, Ph.D.

Acting Chief, Evaluation Branch, Division of Evaluation and Systematic Assessments, OPASI

EDUCATION

Ph.D.: (Sociology, minor in Statistics) The University of Tennessee, 1996

M.A.: (Sociology and Statistics) The University of Tennessee, 1992

B.A.: (Sociology) Lee University, Cleveland, TN, 1987

RESEARCH INTERESTS

Evaluating the impact of biomedical research programs, tailoring cardiovascular health information for lay audiences, and adapting and disseminating evidence-based HIV behavioral risk reduction interventions and drug abuse treatment and prevention programs to meet the needs of minority populations.

PIVOTAL EVENTS

While I was involved in health programs in rural Louisiana, I became interested in evaluating such programs and higher-level policies to determine their ultimate effects on communities. I saw first-hand the consequences of implementing health programs without any evidence of their effectiveness. I realized that a multidisciplinary approach and bringing stakeholders together was needed to see problems from different perspectives and propose solutions that work. This experience reinforced my belief that health policies must be based on sound science.

MENTORING & WORK/LIFE BALANCE

I believe that determination and commitment are necessary but not sufficient conditions for a successful career. I see success on three levels. One level is the respect of peers so that you can work with those around you to implement sound policies. The second level is to mentor others. That is why I have taken an active role mentoring other scientists, especially Latinas in the sciences through organizations like the NIH Hispanic Employee Organization. And the third level is to contribute to the community. When you can achieve this balance, you view your work as an integral part of your life, and you can bring passion to your life, both at work and away from work.

OFFICE OF RESEARCH ON WOMEN'S HEALTH (ORWH)

Vivian W. Pinn, M.D.

Associate Director for Research on Women's Health, NIH; Director, ORWH

EDUCATION

Teaching Fellow in Pathology: Harvard Medical School, 1967–1970

Research Fellow and Acting Intern & Resident: (Pathology) Massachusetts General Hospital, Harvard Medical School, 1967–1970

M.D.: University of Virginia School of Medicine, 1967

B.A.: (Zoology) Wellesley College, 1962

RESEARCH INTERESTS

Immunopathology (renal, uropathology, and transplantation); health of women, minorities, and the underserved; diversity in academic and research careers

PIVOTAL EVENTS

My earliest dreams were to be a pediatrician, but several events changed my career path and provided unanticipated opportunities. During college, I took a leave of absence to care for my mother whose metastatic bone cancer was belatedly diagnosed after she had been treated instead for "arthritis." Her untimely death further confirmed my commitment to be a physician and to be one that would listen to the complaints of patients with an open mind—something that has been central to my way of approaching women's health today. Then, through my college placement service, I was offered a position as a research assistant with Dr. Benjamin Barnes and Dr. Martin Flax at the Massachusetts General Hospital, both known for their work in experimental transplant surgery and basic immunopathology research. That position, which I maintained until completing medical school and expanded upon during my postgraduate training, exposed me for the first time to the rigors and excitement of research and academic medicine—as well as a whole new field of interest that eventually shaped my career as a renal and transplant pathologist. Being the only woman and only person of color in my medical school class also made me aware of special issues that women faced in their health care, as well as an acute sensitivity to issues of women in medicine at a time when it was predominantly a male profession. My responsive-

ness to these issues, by working with students, eventually resulted in my appointment as Assistant Dean for Student Affairs at Tufts University School of Medicine. While Professor and Chair of Pathology at Howard University College of Medicine, a chance encounter with then NIH Director, Dr. Bernadine Healy, resulted in another opportunity to make a change in my career from academic medicine to entry into science policy and administration in what was then the new Office of Research on Women's Health within the Office of the Director of NIH. Unexpected opportunities and thoughtful advice from senior colleagues have been pivotal over the years in providing me with enjoyable and diverse career horizons.

MENTORING & WORK/LIFE BALANCE

The leave of absence during my college years forced me into a more diverse undergraduate curriculum. I became aware of the need for a balanced education including poetry, arts, and other areas, in addition to the strict sciences in which pre-doctoral students usually concentrate, and the need for more balance in life and living. Admittedly, I haven't done as well in actual allocation between my own professional and personal pursuits—but I do try to advise others to do better.

I have come to value mentoring, whether it is recognized by that term or is seen as advice or counseling, as one of the most important factors for being successful in careers in science and medicine, and in preserving one's own pursuit of "life and living" as well as career. The value of mentoring or having someone from whom to seek wise counsel is based on the situations in which I did not have anyone I felt I could consult, as well as having been exposed to tremendous role models who took great interest in counseling and advising their trainees and students, including me. I consistently offer two phrases of advice to striving scientists and physicians: First, have a mentor and be a mentor; second, don't be stopped from achieving greatness—overcome barriers and exceed the lowered expectations of some who would doubt your ability to rise to success.

INSIGHTS

When I had the opportunity to join the National Institutes of Health, I remember wondering if this career change from academic medicine would be wise. But, this pathway for a different career has been stimulating and exciting, just as each of my unexpected career turns has been. So my advice to young and aspiring scientists, or even to those more advanced, is to be open to new opportunities, even if they seem risky, because the possibilities can be endless, and the excitement of new challenges and discovery, priceless.

Lisa Begg, Dr.P.H., R.N.

Director of Research Programs, ORWH

EDUCATION

Dr.P.H.: (Epidemiology) University of Pittsburgh Graduate School of Public Health, 1985

M.P.H.: (Epidemiology) University of California at Los Angeles School of Public Health, 1981

M.S.: (Nursing) University of California at San Francisco School of Nursing, 1972

B.S.N.: Boston College School of Nursing, 1971

RESEARCH INTERESTS

Most of my extramural research career was in the broad area of cancer research, and within that, cancer epidemiology and specially breast cancer. I developed my own extramurally supported research career, and taught and mentored graduate students in epidemiology and nursing before joining NIH in 1998. Since joining ORWH, I have broadened my areas across all of women's health research, partnering with colleagues from across the NIH and HHS to foster greater research in this area.

PIVOTAL EVENTS

I don't have one event, as my career evolved over time as a Master's-prepared Clinical Nurse Specialist in the 1970s. I then moved into senior administrative positions with national groups conducting cancer research projects. It was in the late 1970s that I decided to return to school to obtain my doctorate and pursue my own research activities in the area of breast cancer epidemiology and the broader area of public health. I did so through all of the 1980s and through most of the 1990s until I joined the NIH.

MENTORING & WORK/LIFE BALANCE

While I worked in academia, I mentored countless graduate students in public health and nursing. I also collaborated with numerous academic colleagues as we developed complex research programs. Since joining NIH, where I initially served as Branch Chief for Cancer Training at the NCI, I created new training opportunities for extramural investigators and sought to partner with their institutional mentors, so that as many young researchers as possible could become competitive for NIH-supported research training grants. Since joining ORWH over 7 years ago, I continue to mentor investigators on all levels as they seek to charter and expand their research careers.

INSIGHTS

If I was to suggest anything to younger investigators, it would be to look at the benefits of research collaboration, rather than focus on any negatives in your professional life. Academic career work is even harder now than when I served as a faculty member, there is no question about it, but the opportunities for creative work and professional growth far outweigh any negatives. I truly believe that. As a young investigator, I discovered some great and important insights that help guide me even now. Even the "less generous" colleague can teach you a lot about professional career issues, but also can provide important knowledge that will help your research career and advancement. These opportunities may not be obvious, but if you look for them, you can learn valuable lessons.

Eleanor Z. Hanna, Ph.D.

Associate Director for Special Projects and Centers, ORWH

EDUCATION

Clinical and Research Fellowship: (Psychiatry and Psychology) Massachusetts General Hospital, 1968–1971

Ph.D.: (Psychology) Boston University, 1971

B.S.: (Psychology) Boston University, 1959

RESEARCH INTERESTS

Sex/Gender and socioecological differences in health risk behaviors; factors influencing referral and treatment for modification of substance abuse; effects of treatment for substance abuse on health outcomes

Currently, Chair Trans-NIH Working Group for Research on Chronic Fatigue Syndrome (CFSWG)

PIVOTAL EVENTS

Everything I have done has been the result of unplanned junctures in what should have been a straight forward trajectory to a career as a research psychologist. I had been accepted into the graduate program at Boston University and was to be a teaching assistant; however, biology interfered and I learned during the summer that the child I was told would never arrive until there was surgical intervention was in utero. I was advised to have the baby and then matriculate into the doctoral program. The rationale was that pregnant women never finished their degrees so I was granted a 5-year window in which to do this.

During those intervening years, I had my two children; got my bearings in epidemiological research by being part of the team that developed, produced the manuals for, and helped establish the first cancer registries in Massachusetts; and my husband went on to pursue his advanced degree in electronic engineering. I entered graduate school at the right time in that everyone was beginning to take a public health approach to illness. Additionally, I was in a city divided into distinct ethnic enclaves and produced research for my dissertation that integrated personality theory, socioecologic science, and time perspective to understand alienation. Massachusetts was decriminalizing alcoholism at that point and I became involved with efforts of the Department of Public Health and the Department of Psychiatry at the Massachusetts General Hospital (MGH) to engage and treat alcoholics using multidiscliplinary crosscutting approaches and where I had the good fortune to work with and be mentored by Dr. Morris Chafetz as part of his team.

Still planning on a research career, I stayed on at MGH where I had it all: my first R01 on the first try, teaching, and enough clinical work to keep me involved with patients. Then, my husband died. Not only had I lost my helpful partner, but I was faced with making choices so that my children could continue their lives as planned. Thus, I terminated my outside university teaching, increased my clinical and supervisory roles, and became more involved in administrative matters, remaining an active clinical researcher. Before long, I became a research consultant at the NIAAA and worked closely with the state and city in an advisory capacity, developing and evaluating alcohol programs. In 1976, I was appointed the Director of the West End Practice (Alcohol, Drugs, and HIV) to develop a diverse and professionally staffed service that was fully integrated into many of the diverse hospital services and that attracted medical students, residents, and fellows for training.

Late in 1988, I was invited by NIAAA to design the intervention for and direct their participation in the Prevention and Treatment of Hypertension Study (PATHS), the first national, controlled clinical trial in assessing whether an intervention directed at reducing alcohol intake by heavy drinkers with high blood pressure would reduce blood pressure. While at NIAAA, I had the opportunity to work with Dr. Pinn, who had the broad and inclusive approach to which I had been accustomed in Boston and which is essential in dealing with health, treatment, education, and policy. In 2002, I was invited to join the staff of the ORWH to chair the CFSWG that stimulates and develops interdisciplinary initiatives across the NIH and to develop collegial ties with other governmental and nongovernmental agencies to that same end.

MENTORING & WORK/LIFE BALANCE

Children and their well-being should always be primary.

The sex of a mentor should not be an issue; my male mentors provided all that one could ask for. It is their humanity and strength of character, not only their expertise, that makes for greatness.

My most successful mentees have been men, many of whom remain friends and are in key leadership positions. One must remember that it was a predominately male-populated environment in my career until I arrived at NIH. The women and men who have been successful were those who were fine and decent human beings whom I was able to assist in making the choices appropriate to their lives, accepting them, and continuing to grow in their studies and careers.

INSIGHTS

No truly dedicated professional has it easier because of her sex, nor should she. Most important is seeking out opportunities that permit a reasonable balance or be willing to make and live with the hard choices you must make to get it while continuing to grow, even in adversity. My choice to remain on the research track for promotion rather than take the clinician–teacher route certainly kept me at a lower academic rank, but never hurt my career. In today's world, that might not be possible.

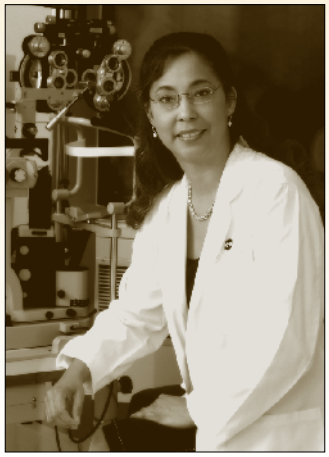
There was never a time when I was not trying to understand the world around me, especially in terms of understanding the external and internal factors involved in human behavior. Thus, I approached my schooling with the intent of learning everything: psychology, biology, sociology, and history, knowing that as a scientist, that would be the foundation on which to build.

The pivotal points in my career trajectory have been due to external life events and seemingly serendipitous; however, I had to make careful choices at each juncture. Perhaps I should/would have made different ones, but I find myself at the end of my career in exactly the right place to continue to apply lessons learned and continue to develop knowledge in health science policy and research.

Janine Austin Clayton, M.D.

NEI Deputy Clinical Director (Former); Deputy Director, Office of Research on Women's Health, Office of the Director, NIH

see full profile in NEI section on page 43



Jennifer Reineke Pohlhaus, Ph.D.

American Association for the Advancement of Science (AAAS) – Science & Technology Policy Fellow, ORWH

EDUCATION

Postdoctoral Fellowship (Ethical, Legal, and Social Issues in Genomics) Duke University, 2006

Graduate Certificate (Health Policy) Duke University, 2005

Ph.D. (Biochemistry) Duke University, 2005

B.S. (Biochemistry/Biophysics) Rensselaer Polytechnic Institute, 1999

RESEARCH INTERESTS

Biomedical: DNA damage and repair, antibiotic resistance, genomics. Policy: Women's health, global health and health disparities, workforce capacity and diversity in STEM (Science, Technology, Engineering, and Math) fields

OFFICE OF THE DIRECTOR

PIVOTAL EVENTS

The most pivotal event in my scientific career was joining the laboratory of Dr. Ken Kreuzer at Duke University. He accepted me into his lab when I decided to part with my first graduate advisor, and he encouraged my developing interests in science policy.

His laboratory was an environment where mutual respect between the advisor and the trainee was practiced by default. I owe my success as a scientist to his willingness to accept me into his laboratory and to the subsequent mentoring that I received from him.

MENTORING & WORK/LIFE BALANCE

Supervisors and advisors are often expected to mentor their employees and trainees, especially in a system like an academic health center. The key to creating a mentoring environment, rather than simply a supervisory or advisory environment, is the presence of mutual respect. I've been fortunate to encounter this type of respectful environment several times in my career.

Like many scientists, I often work compulsively, making it hard to achieve balance between my professional and personal lives. Luckily, my husband is also a scientist, so he understands my work, and he is always willing to listen. Through the many discussions we've had over the years we've been married, I've been able to reach conclusions that were under the surface, making what seemed like a difficult decision into something much easier.

OFFICE OF SCIENCE POLICY (OSP)

Lana Skirboll, Ph.D.

Associate Director for Science Policy, NIH; Director, OSP

EDUCATION

Postdoctoral Fellowship: (Psychiatry and Pharmacology)
Yale University School of Medicine

Ph.D.: (Pharmacology)
Georgetown University Medical School

Lynn Diane Hudson, Ph.D.

Director, Office of Science Policy Analysis, OSP; Chief, Section of Developmental Genetics, Division of Intramural Research, National Institute of Neurological Disorders and Stroke

EDUCATION

Research Associate: Brown University, 1979–1982

Postdoctoral Fellowship: Harvard Medical School, 1977–1979

Ph.D.: (Genetics and Cell Biology) University of Minnesota-Minneapolis, 1977

B.S.: (Biochemistry) University of Wisconsin-Madison, 1973

Nicolet College, Rhinelander, WI, 1970–1972

RESEARCH INTERESTS

Deciphering the gene network that regulates the development and differentiation of oligodendrocytes, the myelin-forming cells of the central nervous system

PIVOTAL EVENTS

The eureka moment—a flash of insight in a darkroom, where a pattern of bands on a film told me something that no one else in the world yet knew—sealed my scientific calling. While the "rush" of such moments is fleeting, an addiction to research persists. I soon found that the thrills aren't limited to one's own experiments. Being surrounded by colleagues banging out results, truly a benefit of being at the NIH, along with the vicarious pleasure of reading the literature, can make each day one of discovery.

My graduate student laboratory studied lysosomal storage disorders, devising new ways to collect and analyze lysosomal enzymes from tears so that those squeamish about having blood drawn could be tested. Helping collect tears for Tay-Sachs Disease screening at a local synagogue cemented my calling for translational research—what could be better than contributing to health solutions while indulging a passion?

MENTORING & WORK/LIFE BALANCE

Not much attention was paid to mentoring in the era when I was developing my scientific identity. One well-intentioned scientist decided that I would benefit from a female role model, so he selected a gifted Yale molecular biologist. This temporary arrangement was terminated when, to his dismay, she had a

baby. In his words, "I thought Joan was more into her science." This didn't deter me from having a family.

When mentoring women scientists, I stress that of course they, too, can juggle family and a scientist's life, and I am truly as delighted about their new babies as their experimental success. My two daughters are both math majors, even after hearing a Harvard president relate innate abilities to the small proportion of women in that field. Mentors must be positive. The worst thing a mentor can do is tell someone they cannot do something.

INSIGHTS

One of the joys of being a scientist is experiencing how science intersects with society. Serving as an officer for the American Society for Neurochemistry, working on scientific advisory boards for the Pelizaeus-Merzbacher Disease Foundation and the National Multiple Sclerosis Society, judging science fairs, helping our institute develop a curriculum supplement on the brain, engaging in peer review—all these activities sparked my interest in policy. How does our scientific enterprise work (or not work) and how can we engineer the system to facilitate research? I've been extremely fortunate both to be located at biomedical research central (= NIH) and to be mentored by savvy senior women who provided the opportunity to learn first-hand what policy is. Now as Director of the Office of Science Policy Analysis, I'm thrilled to be part of a team tackling issues that impact the Nation's health.

Amy Pate Patterson, M.D.

Director, Office of Biotechnology Activities, OSP

EDUCATION

Postdoctoral Fellowship: (Endocrinology and Metabolism), NIDDK and NHLBI, 1988–1993

Assistant Chief Resident: (Internal Medicine) New York Hospital, 1987–1988

Residency: (Internal Medicine) New York Hospital and Memorial Sloan Kettering, 1985–1988

M.D.: Albert Einstein Medical College, 1985

B.A.: (Biology) Harvard University, 1980

RESEARCH INTERESTS

My research focus is the molecular underpinnings of mRNA editing and the relationships between lipid metabolism, infection, and inflammation. In the policy realm, my interests are the intersections of basic science, medicine, ethics, law, society and public health—where policy options are formulated and decisions made with the goal of public service.

PIVOTAL EVENTS

Two events had profound and unexpected effects on my career path. After completing my post-doc at NIH, I was about to begin an academic research position. But due to the need to care for a family member, I postponed those plans to stay in the Washington, DC area. I accepted what I thought would be a short-term position at FDA as a medical officer in the Center for Biologics Evaluation and Research. Over the next 5 years, I learned first hand about drug development, clinical trial design, public health policy, and regulation. I also had the good fortune to be selected to represent HHS at the WHO on an emerging, controversial science policy topic. Scientists and ethicists from 30 nations developed international guidelines that are still in place today. That experience opened my eyes to the diversity of global perspectives in policy development and profoundly influenced my career path toward science policy, which offered ample opportunity for problem solving and public service, while delving into the crossroads of science, ethics, law, and society.

MENTORING & WORK/LIFE BALANCE

My first supervisor during a summer internship at NIH included me in developing and testing hypotheses as well as writing manuscripts. This was an important message for me at age 17—that ideas are tested and honed through experimentation and thoughtful, lively discourse. These lessons hold true in the lab and in science policy.

In medical school and residency, every patient was a mentor; I learned that the only "wrong" question was the one I didn't ask; the one diagnosis I didn't think of was the one I might not make and one person I would not help. One of my professors emphasized medicine as a profession for those with a passion for "eating problems for breakfast." A meticulous differential diagnosis, expecting challenge and dilemma, and finding joy in problem solving are critical in medicine and also turn out to be true assets in science policy. My current supervisor embodies these skills in spades and expects thorough analyses of issues.

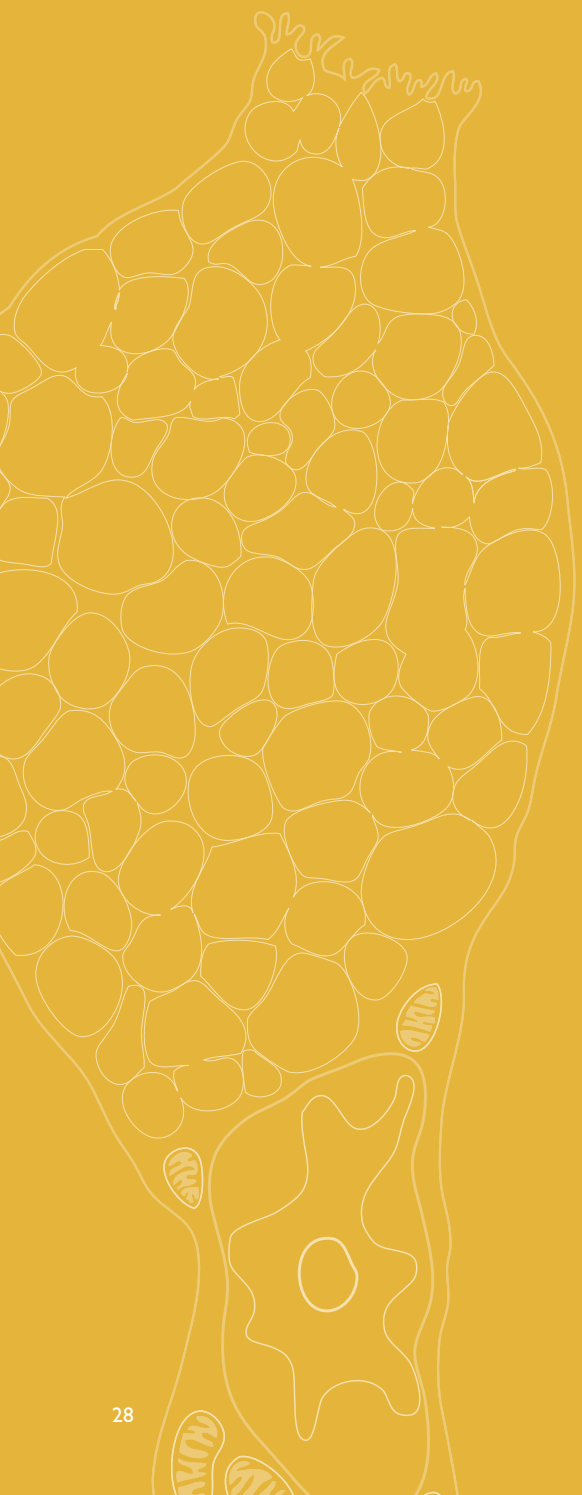
Enjoying problem solving is also a skill essential for balancing work and family life. My husband and I have four children and they are our top priority. In order to make that happen, our lives have to be well organized. I have learned to expect the unexpected as a part of life and to have back-up plans in place.

Skills for raising a family—conflict resolution, negotiation, patience, resiliency, and time management—will stand one in good stead during any work day in the sciences.

INSIGHTS

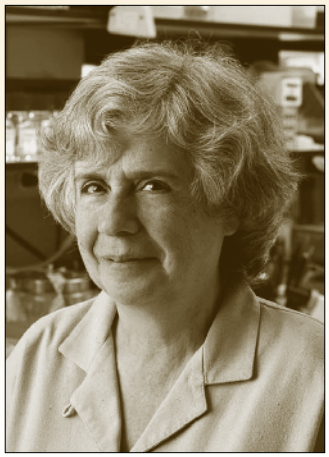
Accept challenge. I was surprised when I was asked to serve as Assistant Chief Resident in Internal Medicine. It meant supervising the residents and the medical team responding to cardiac arrests and triage admissions from the emergency room and being first on call to supervise both the cardiac and medical intensive care unit at night. I accepted not because I felt I possessed the supervisory skills, but because of my passion for medicine and working with people. Through that experience, I learned much about accepting challenge, supervision, decisionmaking, and testing my preconceived notions. Pursue passion. Through my experience at FDA and WHO, I also learned the value of pursing one's passion while choosing a career path and being open to new and unanticipated opportunities, even if it takes you off the career trajectory you had planned. I didn't plan a career in science policy, but life intervened with unexpected personal challenges and professional opportunities, enabling self-discovery. Without passion for your work, there is little reward; caring deeply about what you do helps provide the drive to work through challenges. Third point, expect the unexpected and train yourself to enjoy challenge. Not only is this the heart of scientific inquiry but is, not surprisingly, a big part of raising a family as well. Fourth point, aim your efforts at excellence and shift your focus beyond yourself. Being a woman in science is not, for me, the issue—it is aiming for science in the service of public health. Finally, doors usually do not open unless you knock.

National Cancer Institute



Susan Gottesman, Ph.D.

NIH Distinguished Investigator and Chief, Biochemical Genetics Section, and Co-Chief, Laboratory of Molecular Biology, Center for Cancer Research



EDUCATION

Ph.D.: (Microbiology and Molecular Genetics) Harvard University, 1972

B.A.: (Biochemical Sciences) Radcliffe College, Harvard University, 1967

RESEARCH INTERESTS

Novel regulatory mechanisms: protein turnover and small noncoding RNAs and the regulatory networks they participate in. I study these in the bacteria *E. coli*. Our lab and our collaborators have identified the ATP-dependent Clp proteases, akin to the eukaryotic proteasome, and their in vivo roles, and, more recently, dozens of noncoding RNAs that act to posttranscriptionally regulate gene expression and are similar to microRNAs and RNAi in eukaryotes.

PIVOTAL EVENTS

Family constraints and serendipity brought me to NIH for a postdoc while my husband, Michael, was in the Public Health Service in place of the draft; a continuation of my postdoc project led to beginning work on energy-dependent proteolysis, a major focus of the lab. An invitation from my Ph.D. advisor to chair a session at a Gordon Conference relatively early in my career led to invitations to write some important reviews, which in turn, led to other opportunities. Collaborations with M. Maurizi and S. Wickner in the NCI moved this work forward in ways I would not have been able to do myself. The freedom to follow up on some unexplained results led to the development of our work on small noncoding RNAs, and the opportunity to collaborate with others at the NIH (particularly G. Storz at NICHD) again moved this project ahead in directions and ways we could not have achieved alone.

MENTORING & WORK/LIFE BALANCE

My two children were born while I was a graduate student and a postdoc, when, even though things were busy, we didn't have any obligations other than our own work and the family. Both the labs I was in at the time were supportive (my grad student advisor provided extra funds for child care), and I basically didn't take a lot of time off. However, we've always managed to

live near the lab, allowing quick visits to school or other activities when the children were young, and limiting the time spent commuting. My husband, also a scientist, and I shared childcare duties, and because both of our schedules were relatively flexible, this worked out with only occasional chaos. Working at NIH made this a lot easier as well—no teaching and no grants meant there was time to attend PTA meetings in addition to being in the lab.

INSIGHTS

After leaving the NIH, I was a research fellow at MIT for 2 years while Michael finished his residency; David Botstein provided support and allowed me to continue on my own project, continued from my postdoc. Work on this led me to pursue energy-dependent proteases when I established my own lab at the NIH, and our demonstration of the role of proteolysis in turning over a cell division inhibitor, as well as collaborative work to identify other bacterial proteases and their function, led to my election to the National Academy of Sciences (NAS) in 1998. This work serves as the basis for understanding how protein turnover is used as a regulatory mechanism in bacteria. A side project on regulation of an unstable protein led, in the mid-90s, to the recognition of the function of a noncoding RNA, leading to other noncoding RNAs, and analysis of how they work, projects that gradually have taken center stage in my lab, and that have attracted excellent postdocs and some attention from the rest of the scientific world, in part because of the important role of small RNAs in eukaryotic cells.

As a woman doing science at a point when there were not quite as many of us around, I had the opportunity to serve on committees or give talks that I might not otherwise have been chosen for. While this can get out of hand, it often provided a broader view of my science, introductions to other scientists in many fields, and chances to participate in decisionmaking on policy issues.

Elaine S. Jaffe, M.D.

Senior Investigator and Chief, Hematopathology Section, Laboratory of Pathology, Center for Cancer Research

EDUCATION

M.D.: University of Pennsylvania School of Medicine, 1969

Cornell University Medical College, 1965–1967

A.B.: (Zoology) Cornell University, 1965

RESEARCH INTERESTS

Diagnosis, biology, and pathogenesis of benign and malignant lymphoproliferative disorders; relationship of lymphomas to the normal immune system

PIVOTAL EVENTS

As a second-year medical student, pathology captured my interest immediately. By examining cells and tissues, I could see with my own eyes disruptions in normal physiology and function. Certainly one could later study these at the biochemical or molecular level, but it is careful morphological analysis of the diseased tissues that often provides the first insight into the problem. Additionally, examination of a microscopic section can tell a whole story, revealing the patients' signs, symptoms, and expected clinical course. The pathologist is like a detective, deciphering the morphological clues to arrive at the correct solution, and still today, discovering and uncovering a difficult diagnosis provides me with great satisfaction.

MENTORING & WORK/LIFE BALANCE

I benefited from wonderful mentors, and for me, facilitating the careers of young scientists is a great reward. I began my studies of lymphoma at a time when immunology was entering the modern age, and one was first able to identify and dissect the functions of T-cells and B-cells. A wonderful partnership was forged between Costan Berard, my mentor in pathology in the 1970's, and Ira Green and Michael Frank, immunologists working in NIAID. Ira, in particular, was gregarious, curious, and eager to share his knowledge of the immune system. The marriage of immunology and pathology was critical to my career success.

My first child was born during my fourth year of medical school; my second during my pathology residency. While balancing career and family was a challenge, my husband and family were always supportive. I think my children appreciated

my enthusiasm for my work, but knew that it did not diminish my interest and delight in their lives and achievements. My immediate supervisors always understood the competing demands in my life. However, I think a key for anyone in this situation is good organizational practices, maintaining your priorities, and staying focused at work.

INSIGHTS

One of my earliest papers dealt with follicular lymphoma, which was then called "nodular lymphoma," because of its uncertain relationship to lymphoid follicles. Using red cells bound with antibody and complement, we showed that the cells in the lymphoma expressed the same receptors as normal germinal center B-cells. This provided critical evidence linking "nodular lymphoma" to the lymphoid follicle. This paper, which was published in 1974 in the New England Journal of Medicine, became a Citation Classic. This work, done during my fellowship, provided some of the first evidence that neoplastic lymphoid cells recapitulated the functional properties of their predecessors. I have spent the subsequent 30 years dissecting the immunological diversity of lymphomas, and showing how they miraculously can inform us, not only about the biology of disease, but also about the normal immune system.

I think a few other milestones stand out in my mind. In 1999, I was named by Science Watch as one of the 10 most frequently cited researchers in clinical oncology between the years 1981 and 1998. I was the only woman named on the list. Hopefully, when the next tabulation is conducted, the contributions of women in science will merit greater recognition.

I have been fortunate to be recognized by my peers in pathology, hematology, and medicine. I served as the President of the Society for Hematopathology, President of the United States and Canadian Academy of Pathology (USCAP), and Chair of the Medical Sciences Section of AAAS. An amusing incident took place during my tenure as President of USCAP. During an Executive Committee meeting, we were discussing potential nominees to run for the Council. A number of women pathologists were mentioned as candidates. The Executive Director of the Society commented that "we could not have too many women on the slate, as we were in danger of having an all female ballot." I replied that somehow it was never a problem when exclusively male slates were proposed in prior years. I think the point hit home, because that individual has recounted that story several times, and taken the message to heart.

A recent milestone was serving as Senior Editor of the World Health Organization classification, Pathology and Genetics of Tumors of Haematopoietic and Lymphoid Tissues (2001). It is the first system for the classification of hematolymphoid neoplasms to be adopted on a worldwide basis. Moreover, the process we used to generate this classification has been looked to as a model of consensus development to be adopted by others. Indeed, following this success, I was asked to serve as one of four international editors for the next Edition of the WHO Monographs.

Elise C. Kohn, M.D.

Senior Investigator and Head, Molecular Signaling Section, Medical Oncology Branch and Affiliates, Center for Cancer Research

EDUCATION

M.D.: University of Michigan Medical School, 1983

B.S.: (Cellular and Molecular Biology) University of Michigan, 1979

RESEARCH INTERESTS

Bench to bedside and back studies related to regulating the tumor and its microenvironment for clinical benefit. Targets include survival and chaperone proteins in ovarian cancer.

PIVOTAL EVENTS

Important experiences in my career include opportunities, such as being an NCI summer student and having outstanding mentors such as Lance Liotta, Richard Wyatt, and Eddie Reed. Exposure to both clinical and laboratory research allowed me to identify aspects of the laboratory science that could be applied to the clinic and components of the disease that I could apply to the laboratory. Finally, the freedom to be creative and follow the science, something still unique at the NIH for early-stage clinicians and scientists, was essential to my development.

MENTORING & WORK/LIFE BALANCE

Mentoring is one of the most important aspects to the successes I feel I have had and I am indebted to my mentors, especially Lance Liotta. It is also one of the most important aspects of my position as a clinician and scientist in the Medical Oncology Branch. Mentoring from high school students through near tenure-track investigators adds a major dimension and satisfaction to my job. I call my lab and clinical teams my other family.

I am a "late bloomer" as a parent, not becoming a parent until well after attaining tenure and my independent laboratory. However, I did experience the diagnosis, treatment, and death from cancer of my mother and mother-in-law early in my career. These experiences gave me a different insight into what it meant to me to be a cancer doctor and researcher. This is now further reinforced by my current experiences as a cancer

patient and how it affects my young son, my husband, and our relatives. There is no such thing as balance. I am always feeling that I am shortchanging either my home family or my lab family at one time or another.

INSIGHTS

I graduated from the University of Michigan Medical School where I also completed residency training in internal medicine. I came to the NCI for medical oncology training in the Medicine Branch and then joined the Laboratory of Pathology to investigate signal transduction molecular targets in invasion and angiogenesis, and ovarian cancer. My clinical focus is on translational clinical studies of ovarian cancer. I have participated in or led the Medical Ovarian Cancer Oncology Group since 1989 and have been a member of the Gynecologic Oncology Group since 1995.

I serve on a number of NIH, NCI, and extramural NIH committees and programs, which include serving as a participating member and protocol investigator in the Gynecologic Oncology Group, judging the Fellows Award for Research Excellence competition yearly, serving as the co-Chair of the Breast and Gynecologic Malignancies Faculty, and as an editor or on the editorial boards of a number of medical journals. I have been honored to receive recognition for my work, which includes election as a Fellow of the American Association for the Advancement of Science in 2002 and the Rosalind Elsie Franklin Award for Excellence in Ovarian Cancer Research from the Ovarian Cancer National Alliance in 2006.

Dinah S. Singer, Ph.D.

Director, Division of Cancer Biology;
Chief, Molecular Regulation Section, Experimental Immunology Branch, Center for Cancer Research

EDUCATION

Senior Staff Fellow, Immunology Branch, IIRP, DCBD, National Cancer Institute, NIH, 1978–1982

Staff Fellow: Nucleic Acid Enzymology Section, Laboratory of Biochemistry, DCBD, National Cancer Institute, NIH, 1975–1978

Ph.D.: (Human Genetics and Development) Columbia University, 1975

M.Phil.: (Human Genetics and Development) Columbia University, 1974

B.S.: (Biology) Massachusetts Institute of Technology, 1969

RESEARCH INTERESTS

Regulatory mechanisms governing gene transcription; cancer biology

PIVOTAL EVENTS

Scientific success—whether based in the laboratory, clinic, or administration—is seldom based on either pivotal findings or events. Rather, success comes from cumulative "small" successes. In research, these successes derive from novel observations, which build on one another. For me, each novel observation was a "pivotal" event: the realization that I was learning something that had never been known before. The thrill of each discovery encouraged me to continue onto the next one.

It is important to note and remember that success in science is never achieved alone, but in collaboration with colleagues, fellows, and trainees. I am grateful to all of the outstanding individuals with whom I've been fortunate to work; my successes are equally their successes.

MENTORING & WORK/LIFE BALANCE

One of the greatest rewards of my scientific career has been the ability to mentor trainees at all levels: high school students, college students, post-bacs, graduate students, and postdoctoral fellows. Being able to teach them the pursuit of scientific questions, to watch their growth as scientists and share in the enthusiasm for scientific research has been and continues to be a great joy; watching their independent careers develop has been a continuing pleasure.

The skills required for mentoring trainees in a lab are not fundamentally different from those needed to raise a family. Indeed, they are probably mutually supportive. So, balancing family and professional responsibilities does not require distinct skill sets, just a commitment to both and careful time management. Needless to say, I couldn't have performed the "balancing" act without the continuing support of my family.

INSIGHTS

I have been fortunate to have had two parallel careers in science—one laboratory based and one administratively based—that were complementary and mutually supportive. My laboratory-based career has been centered on studies of the molecular regulation of MHC class I genes and conducted within the Experimental Immunology Branch, Center for Cancer Research (CCR), NCI.

My accomplishments in this arena include the generation and characterization of the first MHC class I transfected cell lines and transgenic mice; the discovery that HIV Tat represses MHC class I transcription, thereby contributing to viral avoidance of immune surveillance; the discovery that susceptibility to autoimmunity correlates with MHC class I expression and that

down regulation of MHC class I expression confers protection from autoimmune disease; the discovery of a novel class of core promoters, the ATG deserts, that support transcription from multiple start sites and thus create a platform for integration of regulatory pathways; the discovery that general transcription factor complexes are dynamic structures that actively participate in the regulation of gene expression.

As a science administrator, I have served as special advisor to the Deputy Director for Intramural Research where I formulated the original tenure-track policy; as special advisor to the Director, NCI, where I developed the NCI Scholars Program and the K22 award mechanism; as a Senior Science Officer at the Howard Hughes Medical Institute, where I managed the research programs of HHMI investigators; and most recently as Director, Division of Cancer Biology, NCI, where I am responsible for oversight of the NCI grant portfolio in cancer biology and for facilitating and supporting the emergence of new ideas, concepts, technologies, and opportunities in cancer biology. Examples of the initiatives that I have been responsible for are the implementation and management of the Mouse Models of Human Cancer Consortium, the Integrative Cancer Biology Program, and the Tumor Microenvironment Network.

Margaret A. Tucker, M.D.

Chief, Genetic Epidemiology Branch and Director, Human Genetics Program, Division of Cancer Epidemiology and Genetics

EDUCATION

Fellowship: (Medical Oncology) Stanford University Medical Center, 1981–1983

Residency: (Internal Medicine) Stanford University Medical Center, 1976–1978

M.D.: Harvard Medical School, 1976

B.A.: (Biology) Wellesley College, 1972

RESEARCH INTERESTS

Etiology of melanoma; familial cancers; multiple primary cancers; genetic and environmental components of cancer risk

PIVOTAL EVENTS

During my time in medical school, there were no women in leadership positions, and only one female professor (whom I did not encounter). I worked part-time for Dr. Fred Li interviewing families having at least two children with cancer. Fred introduced me to Dr. Joseph Fraumeni and Dr. Robert Miller at the NCI. I spent part of my elective time there working on familial non-Hodgkin lymphoma, and developed a fascination for family studies and cancer epidemiology. After residency, I returned to the NCI, where I have worked in cancer epidemiology ever since. Dr. Fraumeni and Dr. Robert Hoover have offered challenging opportunities and good mentoring. I have enjoyed working with and learning from colleagues in my branch. Family members who have participated in our studies have been, perhaps, my greatest teachers and my deepest inspiration. Their generosity is extraordinary.

MENTORING & WORK/LIFE BALANCE

Mentoring is essential to help young investigators grow into independent scientists, but is also important at all career stages. All scientists need others to help them grow, develop new approaches, test out novel hypotheses, and continue to learn. Wallace Clark was an outstanding role model for me, with his boundless enthusiasm for learning across many disciplines—from pathology to poetry to philosophy to photography.

Balancing family life and a demanding career is difficult for everyone; I don't know anyone who feels they have been successful at achieving perfect balance. There have certainly been periods in my life when I worked far too many hours and was less attentive to my family than I would have liked. There have been other periods when family needs were higher priority than work. I certainly have no regrets about the time I have taken to be present with my family.

INSIGHTS

I have worked with melanoma-prone families for about 30 years. When I returned to NCI, Mark Greene was initiating a clinical evaluation of melanoma-prone families with Wallace Clark. When Mark left several years later, I took over the study. Alisa Goldstein has taken the lead in the genetic analyses of these families. Mary Fraser has been the research nurse for almost 30 years. We have identified two major susceptibility genes for familial melanoma, CDKN2A and CDK4. These findings have been replicated in other families worldwide. We were founding members of the international melanoma genetics consortium, GenoMEL. We are working with GenoMEL to find additional melanoma susceptibility genes, evaluate gene–gene interactions, estimate penetrance of the mutations, conduct genotype–phenotype analyses, and define the associated cancers.

I also conducted a case-control study of melanoma in collaboration with investigators from the University of Pennsylvania and University of California, San Francisco. We demonstrated that dysplastic nevi, unusual nevi first identified in NCI melanoma-prone families, are a central risk factor for melanoma

in the general population. In collaboration with Thomas Fears and DuPont Guerry, we developed a risk prediction model for 5-year absolute risk of melanoma. This model is posted at http://www.cancer.gov/melanomarisktool/.

It is exciting to see so many women investigators currently at the NIH. When I first came, there were few in leadership positions. When I became a branch chief in 1992, I was the only woman lab/branch chief in the Division of Cancer Etiology. Drs. Fraumeni and Hoover, and Dr. Sheila Zahm have been proactive in recruiting and promoting women. Division of Cancer Epidemiology and Genetics (DCEG) has been ahead of other intramural components at NIH in the percentage of women postdocs who become tenure track and tenured investigators. The leadership in DCEG is pretty evenly split between men and women.

Rachel Ballard-Barbash, M.D.

Associate Director, Applied Research Program, Division of Cancer Control and Population Sciences

EDUCATION

Malbrook Fellow:
(Clinical Nutrition)
Mayo Clinic, 1984–1986

Fellowship: (Preventive Medicine)
Mayo Clinic, 1983–1986

M.P.H.: (Epidemiology)
School of Public Health,
University of Minnesota, 1985

Residency: (Internal Medicine)
Northwestern University, 1981–1983

Internship: (Internal Medicine and Pediatrics)
Bowman Gray, 1980–1981

M.D.: University of Michigan School of Medicine, 1980

B.S.: (Natural Resources) University of Michigan, 1976

RESEARCH INTERESTS

I direct the Applied Research Program within the NCI's Division of Cancer Control and Population Sciences. The program's mission is to understand how and why cancer care and control activities in the United States influence patterns of care and trends in cancer incidence, morbidity, mortality, and survival through evaluation of patterns and trends in cancer-associated health behaviors and risk factors, healthcare services, economics, and outcomes, including patient-reported outcomes. My personal research focuses on 1) examining the association of diet, weight, and physical activity with cancer risk and prognosis in order to identify targets for prevention and control of primary and recurrent disease; 2) advancing research on policy, environmental, and contextual factors that may influence adoption of recommended health behaviors; 3) improving systems for evaluating cancer control in national and local populations; and 4) examining healthcare utilization and quality of cancer care.

PIVOTAL EVENTS

I have very little sense of having experienced pivotal events that influenced my career. However, one of the earliest events was training from my parents who taught their eight children that a life of service to people was a great honor and that if you started a job, you completed it. Growing up in a family of 10 strong people also taught me the importance of negotiation in achieving a goal. The process of bringing together new ideas from very different perspectives has always excited me and seemed a foundation of scientific discovery. Early in my career, I spent some time working across different Federal agencies in the field of nutrition. From that experience, I learned that NIH provides unique opportunities to influence the direction of research discovery in health and medicine, which is one of the reasons I am here.

MENTORING & WORK/LIFE BALANCE

One approach to ensuring growth in a field of research is to excite other investigators about the promise of that field. Mentoring new investigators provides the greatest opportunity to engage new thinking and excitement as they are often much more open about approaching a problem from a new perspective. A vital factor in sustaining a research career is the ability to balance family and personal goals with professional goals and responsibilities. In fact, sharing this perspective on how to accomplish that balance is a key part of mentoring. Research and professional work provide opportunities to contribute intellectually and to societal and health goals; my children, family, friends, and personal growth enrich life and give it meaning. A great tool for me in achieving balance has been to exercise regularly—it clears my mind of clutter. I often have my best insights while running!!

Louise A. Brinton, Ph.D.

Chief, Hormonal and Reproductive Epidemiology Branch, Epidemiology and Biostatistics Program, Division of Cancer Epidemiology and Genetics

EDUCATION

Ph.D.: (Epidemiology)
The Johns Hopkins University School of Hygiene and Public Health, 1979

M.P.H.: (Epidemiology)
University of North Carolina at Chapel Hill, 1972

B.A.: (Anthropology)
Beloit College, 1971

RESEARCH INTERESTS

Epidemiology of breast and gynecologic cancers; effects of exogenous hormones

PIVOTAL EVENTS

My success as a scientist has primarily reflected the influence of mentors who have allowed me to pursue my true interests. This included a department chair in graduate school who allowed me to transfer to the epidemiology department when I discovered that medical anthropology was not the best fit for me. Although individuals without medical training had not previously been accepted into the department, he provided me a unique opportunity through his recognition that social factors are essential in predicting health. At NCI, my mentors have provided me with opportunities to become involved in many interesting and challenging research projects, some of which appeared on the surface not to be logistically feasible. This has included a number of international projects, which interestingly have allowed me to fulfill my initial interests in medical anthropology in a much more effective manner than had I stayed within the field of anthropology.

MENTORING & WORK/LIFE BALANCE

As indicated previously, effective mentoring has been essential to my development as a scientist. I began work at NCI as a graduate student and my success is largely due to unselfish mentoring by a number of talented colleagues. These important individuals provided sufficient nurturing, but also allowed me an opportunity to develop as an independent scientist through their efforts to recognize my strengths. I have also had a tremendous advantage in working in a division that offers great flexibility in terms of merging personal and career interests. This has allowed me the opportunity to pursue my interests while maintaining a reasonable balance between work and family life.

Michaele Chamblee Christian, M.D.

Associate Director, Cancer Therapy Evaluation Program, Division of Cancer Treatment and Diagnosis (Former)

EDUCATION

M.D.: Georgetown University School of Medicine, 1980

Pre-med courses, George Washington University, 1974–1975

B.A.: (Political Science)
Manhattanville College, 1969

RESEARCH INTERESTS

Early therapeutics development, ovarian cancer treatment, clinical trial design and methodology, health disparities and enhancing the participation of underrepresented populations in clinical trials

PIVOTAL EVENTS

In high school, I was not very good at math and, therefore, science courses such as chemistry and physics, and was discouraged from pursuing pre-med studies in college. I followed that advice and studied political science and art. Seven years later, I decided that I should pursue medicine since that had been my childhood dream and dreams deferred give rise to long-term regrets. I had to take the required pre-med courses before entering medical school. I did so with some trepidation but got A's in nearly all of them and went onto graduate first in my medical school class. Because of the 7-year hiatus in my education, I did not pursue a Ph.D. despite the fact that I loved the laboratory when I was finally exposed to it late in my career. However, I have had a very satisfying career in clinical research and cancer medicine.

MENTORING & WORK/LIFE BALANCE

Effective mentoring is one of the most challenging needs of academic scientists and, yet, lack of mentoring is a common complaint of women and minorities. I did not have good mentoring, which is one reason that I had no basic science laboratory exposure until late in my academic career. As a black woman physician–scientist, I have attempted to provide and foster mentoring and to work with oncology professional societies to ensure that they are active in this area.

Having a family was a very high priority to me. I had the first of my three children as an intern and the second as a senior resident. Although this wasn't ideal timing, I have successfully combined raising a family and managing a successful career. This has required compromise, a strong support system—especially from my husband—and resources. It requires that you either get housekeeping help or learn to deal with a few dust

balls. I chose a flexible work setting that allowed me to be present for "important" events in my children's lives. Some very prominent women scientists have stopped working while their children were young and gone onto achieve significant scientific prominence. The most critical element is to clearly define what's important, your priorities, and then arrange your career life to achieve them.

Kathleen A. Cronin, Ph.D.

Mathematical Statistician, Statistical Research and Applications Branch, Surveillance Research Program, Division of Cancer Control and Population Sciences

EDUCATION

M.P.H.: (Epidemiology)
The Johns Hopkins University School of Hygiene and Public Health, 1996

Ph.D.: (Operations Research)
Cornell University, 1995

M.S.: (Operations Research)
George Washington University, 1989

B.S.: (Industrial Engineering) Buffalo University, 1985

RESEARCH INTERESTS

Modeling factors influencing population trends in cancer incidence and mortality, including risk factors, screening and treatment, developing statistical methods for measuring and reporting cancer survival, developing methods to measure cancer burden in the population, modeling individual risk for cancer patients

PIVOTAL EVENTS

I entered graduate school with the intention of continuing in engineering, but was quickly attracted to the area of biostatistics. The application of statistical methods to public health problems captured my interest and represented an area where I hoped I could make a contribution. After graduate school, I came to NCI as a cancer prevention fellow, which allowed me to change the direction of my career to focus on cancer research and included the opportunity to study epidemiology through an M.P.H. program. Statistical and engineering training in combination with an understanding of public health issues provided me with a unique point of view. The fellowship also gave me the opportunity to work with several groups at NCI, including the surveillance research program. Population-based research matched my skills and interests and I have continued to work in surveillance for the previous 10 years.

MENTORING & WORK/LIFE BALANCE

With an 8-year-old son and a 5-year-old daughter at home, balancing family and professional responsibilities is a constant struggle. It is very easy to get caught up in trying to do everything and setting unrealistic goals for yourself. The advice that I have received was to acknowledge constraints both at home and at work and then be satisfied with your accomplishments in both areas. There have been times when I took on less responsibility and even worked part-time for several years after my daughter was born. Finding and maintaining the balance that is right for me certainly contributes to my quality of life in many ways and allows me to better enjoy the time I spend at work.

Brenda K. Edwards, Ph.D.

Associate Director, Surveillance Research Program, Division of Cancer Control and Population Sciences

EDUCATION

Ph.D.: (Biostatistics)
University of North Carolina at Chapel Hill, 1975

M.S.: (Biostatistics)
Vanderbilt University, 1970

B.S.: (Mathematics & Biology)
Murray State University, 1968

RESEARCH INTERESTS

Cancer surveillance, biostatistics, national health data systems, survival analysis, clinical trials

PIVOTAL EVENTS

The research environment and colleagues with diverse interests and expertise who work at the National Cancer Institute have been very influential in my scientific career. At NIH, posing questions and engaging a multidisciplinary scientific team to develop a series of studies that will provide answers is a normative but challenging aspect of each day. The role of a biostatistician provides many opportunities to work on a wide range of research projects. Fortunately, I have been involved in cancer prevention and control since its formative days and continue to collaborate with other public and private partners to integrate surveillance systems for reporting on progress in reducing our national cancer burden.

MENTORING &WORK/LIFE BALANCE

It has been my privilege to be trained by some of the leading statisticians in the world who valued their role as mentors and thoroughly enjoyed the field of statistics and analysis of data. Naturally, passing along this inheritance of genuine enthusiasm for applying innovative solutions to important public

health issues is something I try to do. Balancing professional responsibilities with personal interests and needs can get off-centered more often than I would like. Realignment of priorities and time are required whenever either the joy of work grows dim or the concerns of family are being neglected.

Ann W. Hsing, Ph.D.

Senior Investigator, Hormonal and Reproductive Epidemiology Branch, Epidemiology and Biostatistics Program, Division of Cancer Epidemiology and Genetics

EDUCATION

Ph.D.: (Epidemiology) The Johns Hopkins University School of Hygiene and Public Health, 1988

M.P.H.: (Biostatistics) University of California at Los Angeles, 1981

B.S.: (Public Health) China Medical College, Taiwan, Republic of China, 1979

RESEARCH INTERESTS

Epidemiology of prostate and hepatobiliary cancers; racial disparities in prostate cancer; westernization; endogenous hormones/growth factors; obesity, insulin resistance, and metabolic syndrome; chronic inflammation; genetic susceptibility; molecular epidemiology

PIVOTAL EVENTS

Joining NCI was the most important milestone in my professional life. The Division of Cancer Epidemiology and Genetics has provided me with a rich environment in which to grow as a scientist and a unique opportunity to conduct high-risk, high-impact research in China and Africa. This is my childhood dream come true. As a child, I wanted to become a health professional and help people on the African continent.

Two key events during my early years at NCI shaped my attitude as a scientist. The second day I arrived at NCI, my Branch Chief, Dr. William Blot, a world-renowned epidemiologist, asked me to comment on a manuscript he was writing. I could not believe that such a well-respected scientist would value the opinion of a new postdoc. The following year, before I traveled to China to launch my first study, Dr. Blot told me that, although I was a postdoc, I was representing NCI and everything I said or did mattered. Both times, I was filled with a great sense of pride and responsibility, and I told myself that, regardless of my rank, I would always hold myself and my studies to the highest standard.

MENTORING & WORK/LIFE BALANCE

I have been fortunate to have had great mentors throughout my career. Three giants in epidemiology helped transform my professional life. At Hopkins, Drs. Frank Polk, my academic advisor, and George Comstock, my thesis advisor and former editor-in-chief of the *American Journal of Epidemiology*, taught me epidemiology and scientific writing. At NCI, I worked closely with Dr. Joseph Fraumeni, Jr., one of the best epidemiologists and writers in the field of science. Learning the ropes from these masters helped me develop solid skills and confidence. I have also received excellent career mentoring from Dr. Shelia Zahm, who has always generously shared her experience and wisdom with me and guided me through critical moments of my professional career. My colleague and dear friend, Dr. B.J. Stone, has provided invaluable peer-mentoring daily for the last 19 years. My success cannot be attributed to my efforts alone; I am grateful to my mentors, fellows, and collaborators.

I view mentoring junior investigators as both a privilege and an obligation. As a senior investigator, it is my responsibility to nurture, protect, and help promote the careers of young scientists. I am especially committed to mentoring young women scientists, in particular minority women, as they are more often faced with unique obstacles along their journey to success.

My two children were born before I was tenured. They brought enormous joy to my life, but also presented me with tremendous challenges in balancing professional and family responsibilities. I have not yet been able to achieve a perfect balance; however, with good time management, organizational skills, and strategic prioritization, it is quite possible to have a productive professional and personal life.

Crystal L. Mackall, M.D.

Chief, Pediatric Oncology Branch, Center for Cancer Research

EDUCATION

Fellowship: (Pediatric Hematology/Oncology) Pediatric Branch, NCI, NIH, 1989–1992

Residency: (Combined Pediatrics/Internal Medicine) Children's Hospital Medical Center of Akron/Akron General Medical Center, 1984–1988

Combined B.S. (Natural Sciences)/M.D.: Northeastern Ohio Universities College of Medicine, 1984

RESEARCH INTERESTS

Immunotherapy, immune reconstitution, T cell homeostasis, pediatric oncology, tumor immunology

PIVOTAL EVENTS

The single most important element of my NIH experience that provided me the opportunity to succeed was the availability of committed and qualified mentors within the NIH environment who made their interactions with junior members of their team a priority in their own busy schedules. Among these, Ron Gress was a pivotal influence in my scientific development and without his guidance and commitment, I would not have achieved my current level of success. In addition, having come to NIH with very little research experience (but plenty of drive and determination), my success depended largely upon the steadfast commitment that the Intramural Research Program has made to the training of physician–scientists. Fulfilling this commitment requires that the Intramural Research Program maintain strong clinical and scientific communities that work side-by-side and encourage the recruitment and training of talented young physicians who are dedicated to careers in science.

MENTORING & WORK/LIFE BALANCE

Each individual has to make a personal decision regarding priorities in his/her life. For me, I determined early in my career that my desire to have, and be part of, a family is my highest personal priority. Thus, while I love science and am incredibly dedicated to my professional career, I have found that life's day-to-day stressors are more manageable by making a clear personal commitment to putting my family first. This does not mean that my family has not sacrificed on behalf of my career, but rather when "push-comes-to-shove" and the goals of each are irreconcilable, my family comes first. As a result, I am blessed to be raising two wonderful sons, currently aged 9 and 12, and to be part of a loving and committed relationship of 27 years with my life partner.

Because I know that my own success was directly related to the commitment and talent of my mentors, I believe that my impact, in the long run, will ultimately depend upon my ability to impart my enthusiasm and love of science to young researchers. In this venture, I am careful to focus on both their intellectual and personal development, teaching them how to be good citizens within the greater scientific community and helping them to find their own personal happiness by exploring and defining their life's goals and priorities. For most of the students and fellows that I mentor, this involves finding that same balance between work and family that I have found and that I encourage. When my fellows are happy and successful in both their personal and professional lives, then I believe that I have succeeded in mentoring.

Cheryl L. Marks, Ph.D.

Program Director, Mouse Models of Human Cancers Consortium and Associate Director, Division of Cancer Biology

EDUCATION

Ph.D.: (Biochemical Genetics)
The George Washington School of Medicine, 1985

M.S.: (Chemistry)
Southern Connecticut State University, 1970

A.B.: (Chemistry) Randolph-Macon Woman's College, 1966

RESEARCH INTERESTS

Developmental biology, systems genetics, animal models of disease, techniques to foster innovation and facilitate team science

PIVOTAL EVENTS

When I came to the NIH in 1971, I had an M.S. in chemistry, and no personal goal to obtain further formal education. But the laboratory chief for whom I worked had a different objective for me: To ensure that I had optimal career choices for the future. He facilitated my studies for a doctorate, obtaining permission for me to perform research in his laboratory while continuing to work for him. It was a busy 5 years–combining work and study and dissertation research–but his mentoring, unstinting support, and infectious love of science made the experience an exceptionally exciting time in my career. I owe the abundance of science opportunities that earning a Ph.D. affords to him and his wisdom.

MENTORING & WORK/LIFE BALANCE

I cherish the many opportunities I have had to advise young researchers on their research programs in the course of managing extramural grants. Deciding to leave research at the bench after 20 years for science administration was a positive career decision; it is very satisfying to have an impact on the research direction in laboratories in many institutions and to help new investigators secure their first grants.

In balancing family and work, it has helped immeasurably to have a spouse who supports my choices with enthusiasm and candor, especially when we confronted together the challenges of managing care of elderly parents with the responsibilities of two careers.

Eva Szabo, M.D.

Chief, Lung and Upper Aerodigestive Cancer Research Group, Division of Cancer Prevention

EDUCATION

Fellowship: (Oncology) NCI, NIH, 1989–1993

Internship/Residency: New York University-Bellevue Hospital in New York, 1986–1989

M.D.: Duke University Medical School, 1985

B.S.: (Molecular Biophysics and Biochemistry), Yale University, 1982

RESEARCH INTERESTS

Chemoprevention, lung cancer, head and neck cancer, differentiation-based therapies for cancer prevention and treatment

PIVOTAL EVENTS

I completed my training in internal medicine at Bellevue Hospital in New York at the height of the AIDS epidemic, prior to the advent of antiretroviral drugs. Our patients were very sick and there was little infrastructure in place to support the physicians. Especially after hours, the interns typically did almost everything for the patients, from drawing their blood to wheeling them to the radiology suite for X-rays. Since sleep was generally out of the question when one was on-call, I quickly learned that survival depended on "working smart"—quick thinking, efficiency, and organization. We all learned early to accept responsibility because if we did not do what needed to be done, there was no one else to do so. And, I learned the critical importance of being thorough and seeking advice when faced with uncertainty. These lessons have served me well both in patient care and in research.

MENTORING &WORK/LIFE BALANCE

Mentoring young investigators and raising children have many similarities. Both require protection, exposure to new ideas, and a supportive environment to allow them to grow into independence. The mentor feels responsibility for the trainee, much as a parent is responsible for a child's well-being. Mentoring is a life-long process; you mentor those younger than you, but you continue to learn from those around you. I have had the good fortune of learning from outstanding scientists in the field of chemoprevention and find them a constant source of inspiration.

Balancing family with work is particularly challenging, especially for women. That's where "working smart" is critical, to juggle the demands of home and work. Flexibility and commitment from both spouses are required—your spouse must be your willing partner. Setting priorities (which include quality family time) and, at times, sacrificing personal leisure time, are the keys to managing the balance.

Sheila E. Taube, Ph.D.

Director, Cancer Diagnosis Program, Division of Cancer Treatment and Diagnosis (Former)

EDUCATION

Postdoctoral Associate: (Human Genetics) Yale University Medical School, 1971–1973

Ph.D.: (Microbiology) University of Pittsburgh School of Medicine, 1970

B.A.: (Biology) Brandeis University, 1963

RESEARCH INTERESTS

Development of improved diagnostics for cancer, including biomarker trial designs, assay standardization, prediction of response to therapy and prognosis

PIVOTAL EVENTS

Two mentors had major impacts on my pursuit of science and on my success. My college advisor's ability to impart the excitement of the hypothesis-testing approach to scientific thinking and discovery enhanced my ability to critically evaluate data and enabled successful research. My Ph.D. advisor taught me how to effectively communicate research findings both to other scientists as well as to lay audiences. The fascination with biology, the excitement of discovery, and the ability to convey the importance as well as the excitement with clarity have all enabled success in my career as an extramural science administrator.

MENTORING &WORK/LIFE BALANCE

I mentored graduate students as a faculty member at the University of Connecticut Medical School before joining the NIH, particularly helping women plan their careers. I also served on the Committee on the Status of Women Microbiologists and worked on development of programs to help women scientists understand professional options and how to approach job decisions as they pursued scientific careers. This included balancing family and career, a nontrivial pursuit. In my case, I believe I could not have managed to raise two children, now both pro-

fessionals, and pursue my career without the active support of my husband. There were few women role models when I began and little infrastructure that could facilitate dual-career families. We had to create our own infrastructure and make many compromises to allow both careers to progress and the children to be raised successfully.

Barbara K. Vonderhaar, Ph.D.

Chief, Mammary Biology and Tumorigenesis Laboratory, Center for Cancer Research

EDUCATION

Ph.D.: (Oncology)
McArdle Laboratory, University of Wisconsin, Madison, 1970

B.A.: (Chemistry)
Clarke College, 1965

RESEARCH INTERESTS

My research examines local, hormonally driven growth regulatory mechanisms associated with normal mammary gland development and tumorigenesis. Particular emphasis has been placed on clarification of the role(s) of prolactin and the variety of prolactin receptor isoforms expressed within mammary tissues in concert with estrogen, progesterone, and growth factors during these events. The goal is to utilize multidisciplinary approaches encompassing areas such as endocrinology, molecular genetics, stem cell biology, growth factors, oncogenes, cell signaling, and animal model systems to understand the pathobiology of breast cancer.

PIVOTAL EVENTS

As a second-year postdoctoral fellow in the NIH laboratory of Dr. Yale Topper, a pioneer in the area of mammary gland development, I was asked to present my work at the Gordon Research Conference on Mammary Gland Biology when he was suddenly unable to do so. Thus began the long association with the Gordon Research Conferences that has been pivotal to my research success. Over the subsequent 34 years, I attended over 50 Gordon Conferences covering a variety of topics, but primarily the Conferences on Mammary Gland Biology, Prolactin, Cancer, and Hormonal Carcinogenesis. At these intense and exciting meetings, even as a postdoc, I was able to meet the leaders in the field, debate concepts, share insights, and establish and nurture valuable collaborations. I later was elected to Chair the Mammary Gland Conference and to serve on the Board of Trustees (and as Board Chair) for the Gordon Research organization.

MENTORING &WORK/LIFE BALANCE

Mentoring young investigators is one of the privileges and joys of my research program. Since a career in science does not begin at the postdoctoral level, I have had students in my laboratory at the predoctoral level, including high school students as unpaid volunteers. I have mentored 142 high school and undergraduate students, postbaccalaureate and postdoctoral fellows and visiting scientists on sabbatical. I have won several mentoring awards, including the Association for Women in Science (AWIS) Bethesda Chapter Award for Excellence in Mentoring, the Colgate University Visiting Howard Hughes Medical Institute (HHMI) Scholars Mentoring Award, and the NCI Outstanding Mentor Award.

I have been married for 33 years. Together with my husband, I have raised two wonderful sons, clearly demonstrating that it is possible to balance a family and a highly successful scientific career. I have never regretted a decision where I placed family before career. Only when all is well with the family can one effectively concentrate on career.

Lauren V. Wood, M.D.

Senior Clinical Investigator, Vaccine Branch, Center for Cancer Research

EDUCATION

Postdoctoral Fellowship:
(Allergy and Immunology) NIAID, NIH, 1988–1991

Residency: (Internal Medicine and Pediatrics) Baylor College of Medicine Affiliated Hospitals, Houston, Texas, 1984–1988

M.D.: Duke University School of Medicine, 1984

B.A.: (Biology) Oberlin College, 1980

RESEARCH INTERESTS

Vaccines and immune-based therapies for cancer and HIV infection, dendritic cell vaccines, human papillomavirus (HPV) vaccines, adolescent HIV/AIDS

PIVOTAL EVENTS

The pivotal experience of my career has involved professionally living through the transformation of HIV/AIDS from a death sentence to a life of possibilities as a result of advances in basic and clinical research. When I joined the NCI in 1992, we were taking care of the sickest kids on the planet, routinely had 15–20 inpatients that we rounded on until 11pm at night

and averaged over 50 deaths a year. As a consequence of one phase I drug study after another, and ultimately the advent of highly active antiretroviral therapy (HAART), hospitalization became a thing of the past and deaths dropped dramatically. Not everyone made it, but it is the thrill of my lifetime to see my former "babies" getting driver's licenses, graduating from high school, going to college, and even getting married. It's the reason I continue to pursue trying to harness the immune system to produce even better outcomes in HIV and cancer.

MENTORING & WORK/LIFE BALANCE

I consider my father, Don H. Wood, M.D. (deceased 1995), to be my greatest mentor. He was a neurologist whose clinical research focus was stroke and improving stroke outcomes. It made me feel all grown up when we would get to have lunch together over in the Bldg. 31 cafeteria during the rare occasions he was on campus for NINDS Board of Scientific Counselors (BSC) advisory meetings. We could "talk shop" about medicine and research and he would always encourage me to hang tough.

I didn't have quite the challenge that many women do of balancing work and family responsibilities because I didn't get married until later in life—a first-time bride at 45! I was blessed not to have to make a decision that many professional women encounter when they get married: whether to change or hyphenate their name. My husband's last name is the same as my maiden name (and no, we're not related) so I just became Mrs. Dr. Wood. It's definitely a challenge and a lot of juggling, but worth every minute of the wait and the effort. Nothing that's really great comes easy—whether it's a great family life or a great work life and it is possible to have both.

National Eye Institute

Deborah A. Carper, Ph.D.

Special Assistant to the Director

EDUCATION

Ph.D.: (Department of Zoology) University of Maryland, College Park, 1984

B.S.: (Zoology) University of Maryland, College Park, 1972

RESEARCH INTERESTS

Pterygium, cataract, retinopathy of prematurity, omega-3 long-chain polyunsaturated fatty acid prevention of ocular neovascularization

EVENTS

The most outstanding day I had in the laboratory was when we absolutely knew we had cloned the cDNA for aldose reductase, an oxido-reductase implicated in diabetic complications. This event opened a 10-year quest to characterize the gene, its regulation, and the protein's structure/function properties. It was exciting to carry out this research in the early days of molecular biology, with new techniques and machinery coming online in rapid succession.

As another pivotal event, I must mention my gratitude to Dr. Jin Kinoshita, who was my mentor for many years. While working as his technician, he encouraged me to obtain my Ph.D. I can only assume that he saw some scientific potential. He gave research guidance and yet the freedom to grow as an independent investigator. I hope that he would see the following as my greatest compliment to him: "how would Jin do this?"

MENTORING & WORK/LIFE BALANCE

Effective mentoring is so important for a young (and not so young) scientist. Mentors have life experiences that are invaluable when making career decisions, such as how to choose the right laboratory environment, how to network, and how to give back to the science community. The mentor is also enriched. I have delighted in seeing young investigators from my laboratory become scientists and clinicians in their own right.

Balancing family with professional responsibilities is challenging, but manageable as long as you keep a calendar and memo book with you at all times, and have a spouse with a great sense of humor! There is nothing more wonderful than raising a child (my daughter, Katie) and having the support of a loved one (my husband, Steve) on life's journey. Science is the icing on the cake. It adds a dimension of personal identity, it allows you to

dream and discover and make a contribution to our collective knowledge and public health endeavors.

INSIGHTS

One of the early milestones in my career was characterizing a cataract mouse model called the Philly mouse (from Philadelphia). My research showed a deficiency in a functional mRNA for beta-crystallin, a major protein of the lens. Publications in *Science*, *Developmental Biology*, and the *Proceedings of the National Academy of Sciences* were heady experiences for a young investigator. A second milestone was the cloning of aldose reductase, which led to many years of rewarding investigation. At that time, I built a laboratory and learned how to manage and mentor. I realized that one should encourage and welcome the new and exciting ideas and technologies that postdoctoral fellows bring to the laboratory. Lastly, I have participated in rewarding and exciting collaborations. Recently, working with Dr. Lois Smith's laboratory, we found that mice fed a diet high in omega-3 polyunsaturated fatty acids have reduced pathological retinal angiogenesis. Dr. Smith will begin a study in premature babies to see if adding this nutrient decreases the risk of eye damage.

I would consider sharing and discussing your research with mentors and scientists inside and outside NIH a crucial component of a successful scientific career. Positive criticism helps us grow as scientists. It is important to be open to new ideas and suggestions. Asking questions and participating in scientific dialogue has many benefits, which include framing your own future experiments and possibly building lasting and productive collaborations.

Rachel R. Caspi, Ph.D.

Chief, Immunoregulation Section and Deputy Chief, Laboratory of Immunology, Division of Intramural Research

EDUCATION

Fogarty Postdoctoral Fellowship: (Immunology) NEI, 1984–1986

Ph.D.: (Immunology) Bar Ilan University, Israel, 1984

B.A.: (Microbiology) Tel Aviv University

RESEARCH INTERESTS

Autoimmune disease

PIVOTAL EVENTS

As a Postdoctoral Fellow, I discovered in a rat model of uveitis, a potentially blinding disease, that glial Müller cells in the eye regulate activation and function of autoimmune T lymphocytes that cause retinal damage. The mechanism involved down regulation of the high affinity IL-2 receptor, required direct contact, and was not antigen, strain, and even species-restricted, suggesting an evolutionarily conserved role conferring a survival advantage, such as immune privilege. Subsequently similar phenomena were identified for other cells in the eye as well as in other tissues. These findings were published in *Science* magazine in 1987. Another important advance was the development of a mouse model of autoimmune uveitis, which catapulted forward research on basic mechanisms of the disease and is now being used by scientists in this field worldwide.

MENTORING & WORK/LIFE BALANCE

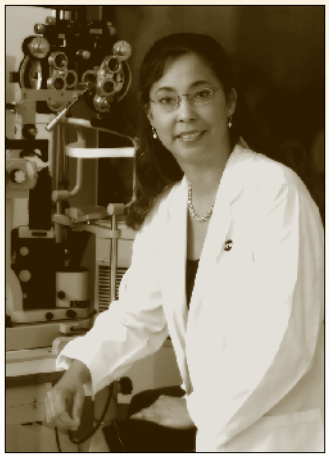
During my postdoctoral and early years as an independent investigator, there was much less awareness of and emphasis on the issue of mentoring than we give it today. Mentoring consisted mainly of interactions about the science being done rather than career development strategies. You had to either sink or swim. As for career and family, I have two grown sons, who were born during my undergraduate and early graduate years. While the timing was a personal decision, I found that it is much easier to miss a lecture when you are not the person giving it. Clearly institutional support for women scientists with family is important, but there is only one formula for success in balancing family and career: strong family support and an equitable division of child care and household duties between the parents.

INSIGHTS

Success as a scientist starts with choosing a subject that is important, asking central questions, and studying them using state-of-the-art approaches. But this is not enough. For a woman scientist in particular, assertiveness and tenacity make all the difference between failure and success. This applies to family as well as to professional issues. It seems that we, women, are our own worst enemies on the road to success. We are often unassertive, shy away from confrontation, and give in too easily. We expect that if we work hard and sacrifice, it will be seen and rewarded, and we are reluctant to "toot our own horn" and insist on recognition. Unfortunately, life does not work that way. You have to aim high, believe in yourself and persevere, or you will never get there. On the other hand, it is important to know when something is not worth a fight. But when opportunity knocks, you should be willing to step forward, be visible, and take on responsibility. Having good female role models can help, and those of us who have become successful are eager to help those on their way up. But it is you who actually has to climb the ladder and no amount of institutional support, pep talk, and good advice can substitute. You really can have it all, if you are willing to work for it with strength of purpose, integrity, and determination.

Janine Austin Clayton, M.D.

Deputy Clinical Director (Former);
Deputy Director, Office of Research on Women's Health, Office of the Director, NIH



EDUCATION

Fellowship: (Uveitis and Ocular Immunology) National Eye Institute, NIH, 1994–1996

Fellowship: (Cornea and External Diseases) Wilmer Ophthalmological Institute, The Johns Hopkins University, 1993–1994

Ophthalmology Residency: Medical College of Virginia, 1990–1993

M.D.: Howard University College of Medicine, 1989

B.A.: (Natural Sciences) The Johns Hopkins University, 1984

RESEARCH INTERESTS

Immune-mediated diseases of the cornea and conjunctiva, pediatric uveitis, role of sex and gender in ocular disease

PIVOTAL EVENTS

As I reflected on this question, I realized there is no single pivotal event, but rather a collection of blessings in circumstances, opportunities, networks of support, and role models that allowed me to grow first as a young girl interested in science into a physician scientist who happens to be a woman. Early exposure of students to all aspects of science is critical to initiate an interest and I was fortunate to have had many teachers who fostered that interest along the way, and incredible parents who provided me with love, support, and a firm foundation on which to grow. Being excited about learning was nurtured by family and teachers and I had many science-related educational experiences. I emphasize these early events because I believe they were critical to prepare a foundation sufficient to buoy me through the challenges of the rigorous education required. This foundation was built partly on educational, but also incorporated personal and broad exposure, encouragement, and validation in a wide variety of arenas. It solidified my resolve to become a physician and researcher.

MENTORING & WORK/LIFE BALANCE

One of my mentors, Dr. LaSalle D. Lefall, Jr., is fond of the saying, "equanimity under duress." As a surgical oncologist and the first African-American president of the American College of Surgeons, he undoubtedly experienced challenges in many arenas. His calm presentation, steadfast commitment to excellence, caring demeanor as a physician, and honorable manner in all aspects impressed upon me the importance of these ideals, first as a human being and second, as a physician. By having Dr. Lefall and others as mentors, I learned first-hand how mentors can have a profound impact by serving as credible role models, recognizing and fostering potential, and through personal validation. Mentors for women don't necessarily have to be women.

There's no magic answer to balancing work and family, but it's so very important to find what works for you. Having the choice is the ultimate commodity; we each carve our own path with the choices we make.

INSIGHTS

Formalized clinical research training facilitated my development as a researcher and having spent time in the laboratory broadened my perspective to encompass a translational approach as a clinician scientist. Fellowship training took more time, but provided invaluable expertise that permitted further career development. Women should not allow their responsibilities to deter them from obtaining the best foundation possible early in career development. Don't short change yourself! It is important to take advantage of opportunities to broaden your horizons when they present themselves; these experiences open doors and provide valuable skills and networks, which are built upon over time. I found it important to look at challenges in terms of what I could learn from them and as part of the journey rather than obstacles. Your outlook can make all the difference.

Sarah Sohraby, M.D., Ph.D.
Deputy Scientific Director

EDUCATION
Ph.D.: (Physiological Sciences) Free University of Brussels School of Medicine, Belgium, 1988

M.D.: Free University of Brussels School of Medicine, Belgium, 1977

RESEARCH INTERESTS
Ion transport in epithelia

PIVOTAL EVENTS
As a foreign Postdoctoral Fellow at NIH, I was lucky to be introduced to a new field—ion transport in cultured renal cells—and to work with a very open-minded and brilliant lab chief (Dr. M. Burg) and an outstanding principal investigator (Dr. J. Turner). I was allowed to use my imagination while they were building my skills. As a team, we obtained beautiful results on a new ion transport protein called the Epithelial Sodium Channel and published in top scientific journals such as Nature and Science. This really boosted my confidence. But it was only when I joined Harvard Medical School for a second postdoc that I realized how well I had been prepared to work on my own. Moving from the nurturing environment of NIH to the incredibly competitive Harvard atmosphere could not have been smoother for me. Again, I was lucky to work with another outstanding and brilliant mentor, Dr. B. Brenner, who had the means to let me have a vision.

MENTORING & WORK/LIFE BALANCE
During the eighties, I think mentoring was so good that there was no need for career development strategies. I never heard those words. It was a given that postdoctoral training in a top lab would open all avenues for a successful career. This is the reason I came to the United States in the first place. And lab chiefs were proud to contribute to those successes. As for family decisions, each of us makes personal choices. I chose to raise my four children with the help of an au-pair who lived in my home. Again, the thinking was different a generation ago and we were more into the 'self-help' mode. I never missed a day of work because of a child's issue. The perception that a woman who takes care of a child is not dedicated to her profession may be the most important impediment to a successful career. It is very unfortunate that to this day, a woman who stays at home with a sick child is never viewed as a competitive professional.

INSIGHTS
As in any career, one has to like what they are doing to do it well. Of course, we can joke about the fact that a working woman always has two jobs, but it is a reality, no matter how much help she gets from her partner. Some women are capable of handling huge loads and we should be proud of that. As a professor in Belgium, I chaired a number of faculty committees and always raised awareness of other committee members, mostly men, that the ability of a woman to balance work and family commitments demonstrated particularly strong dedication and extraordinary capabilities. Although I have never expected those I have mentored to follow my path, I have challenged them, men and women alike, to look deeply within themselves, understand and work on their weaknesses, and capitalize on their strengths. And by the way, those children to whom we devote so much time, but still never enough, will be very proud when they boast about our achievements.

Santa J. Tumminia, Ph.D.
Special Assistant to the Director

EDUCATION
Senior Staff Fellowship: (Mechanisms of Ocular Diseases) NEI, NIH, 1991–1998

Postdoctoral Fellowship: (Biochemistry) Roche Institute of Molecular Biology, Hoffmann La-Roche, Nutley, NJ, 1987–1991

Ph.D.: (Biology) Rensselaer Polytechnic Institute; Troy, New York, 1987

M.S.: (Biology) Rensselaer Polytechnic Institute, Troy, New York, 1984

B.S.: (Biology) St. Joseph's College, Brooklyn, New York, 1982

RESEARCH INTERESTS
My research over the years has included studies of biochemical and structural differences of the major protein components of normal skeletal muscle and muscle obtained from patients diagnosed with neuromuscular disease; protein-nucleic acid interactions, specifically the relationship between ribosomal proteins and RNA; and the mechanisms involved in the disease processes of cataractogenesis and glaucoma. As Special Assistant to the Director of NEI, I undertake special assignments on behalf of the Director, involving program planning, science

policy, intramural and extramural assignments, and special initiatives necessary to accomplish the mission of NEI.

PIVOTAL EVENTS

Although I had always wanted to be a scientist, I had the opportunity to see first-hand what that entailed while in college. As a student researcher at the Oak Ridge National Laboratory, I learned how to formulate a hypothesis, design and implement experiments, and critically analyze data. When I finished the 10-week program, I knew that science was the path my career should take.

A second pivotal event was the transition from bench scientist to science administrator. With the birth of my daughter, I found that I needed to rethink my career. At the Foundation Fighting Blindness (FFB), I learned the "business end" of a grants program. I served as a spokesperson for a variety of media sources, e.g., taped/live radio and national/local newspapers and presented public testimony at congressional briefings. I participated in partnerships with pharmaceutical/biotechnological corporations. I found that science administration could be as satisfying and challenging as bench science.

MENTORING & WORK/LIFE BALANCE

During my research endeavors, I've had the opportunity to supervise and mentor the work of technicians, postdoctoral fellows, graduate students, and undergraduates. It has been a rich experience for me. I found that getting to know each mentored individual not only as a scientist, but as a person, greatly assisted in making the learning experience more satisfying and rewarding for both of us.

Balancing a personal life with professional responsibilities can be a challenge. My biggest challenge occurred when my husband and I were ready to start a family. The entire pregnancy was fraught with difficulties and my daughter was born 3 months premature. After her birth and during her first year, we struggled with her many health issues. At the same time, I juggled a full-time job—planning and carrying out experiments, and writing publications. My NEI supervisor was exceptionally supportive and worked closely with me during this time.

INSIGHTS

As a Science Executive with 20 years' experience in research and administration in government, nonprofit, and corporate environments, I have learned that science can take you in many different directions and they can all be equally rewarding. From research on protein-nucleic acid interactions to studying the mechanisms involved in cataract formation to managing a grants portfolio as the Director of Grants and Awards for a nonprofit foundation, it has all been a wonderful learning experience. Not only for the contributions made to research or the collaborations made with other scientists and funding institutions, but for the relationships forged along the way. These experiences enabled my return to the NEI to serve as Special Assistant to the Director. In this capacity, I stay abreast of current developments and advances in vision research, and maintain an awareness of national efforts in NEI program areas by attending and representing the NEI Director at professional society meetings, national/international workshops, conferences, and symposia. I develop concept plans for future NEI research, programmatic, or policy initiatives. I participate in the identification of emerging scientific developments, which are of interest to the NEI and recommend program plans and strategies for dissemination of information. I develop and implement new policies, procedures, and science initiatives to meet the goals set by the Director. An example of this is the National Ophthalmic Disease Genotyping (eyeGENE™) Network, which involves a partnership of extramural laboratories and eye healthcare providers across the vision community.

My one observation throughout this journey has been that every experience is a learning opportunity. Yes, even those that don't turn out exactly as you planned. Take advantage of every opportunity to interact with others. Serve on committees, work on special projects, and network, network, network. There is a huge resource of help and information out there, if you're just willing to reach out and look for it.

S. Patricia Becerra, Ph.D.

Senior Investigator and Chief, Protein Structure and Function Section, Laboratory of Retinal Cell and Molecular Biology, Division of Intramural Research

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EDUCATION

Ph.D.: (Biochemistry) University of Navarra, Pamplona, Spain, 1979

B.Sc.: (Chemistry, Biology) University Cayetano Heredia, Lima, Peru, 1976

RESEARCH INTERESTS

Structure-function relationships of proteins with current emphasis in the biochemistry and molecular biology of proteins affecting the retina

PIVOTAL EVENTS

My mentors played an important role in inspiring my career. Most of them were women with strong careers, enthusiasm for science, and a good sense of balance between work and family life. However, my husband's encouragement and support was decisive in my continued dedication to science. A first paper

accepted without revisions, a patent issued by the U.S. government, tenure given by the NIH, and the success of postdocs, all have contributed to my continued service to science. The Tenure-track Program at the NIH has had a positive effect on my profession.

MENTORING & WORK/LIFE BALANCE

Our laboratory seeks to achieve its research goal through cutting-edge basic research and training of junior scientists in aspects of RPE/retina related science that are critical to the mission of NEI. The training of scientists is one of the most important activities and a privilege in my scientific life. The responsibility of being a role model for trainees has motivated me to seek a sound preparation for this task, be available, receptive and sensitive to mentees. Our research group has had postdoctoral fellows that share enthusiasm for science, appreciate cultural and individual differences, and enjoy networking and building a scientific and social community.

During my postdoctoral years, I was exposed to outstanding women scientists. One of them gave me advice at a crucial time in my career: family and science are to be the main priorities in your life, she said, while another emphasized the importance of establishing family as early as possible. Sharing science with my family is part of my life, as much as sharing my family with those in the lab. The availability of reliable childcare providers and schools along with good health, reasonable salaries, and understanding supervisors have been essential to maintaining a balance between my family and professional responsibilities.

Emily Y. Chew, M.D.

Deputy Clinical Director; Deputy Director, Division of Epidemiology and Clinical Applications

EDUCATION

Fellowship: (Medical Retina and Genetics) University of Nijmegen, Holland

Fellowship: (Medical Retina) Wilmer Eye Institute, The Johns Hopkins University

Residency: (Ophthalmology) University of Toronto, 1981

M.D.: School of Medicine at the University of Toronto, 1977

Undergraduate: (Science) University of British Columbia, (Arts & Sciences) University of Toronto

Six-year combined undergraduate and medical school program

RESEARCH INTERESTS

My main areas of research are clinical studies, both epidemiologic and controlled clinical trials for retinal diseases, age-related macular degeneration (AMD), and diabetic retinopathy, two leading causes of blindness in the United States. We collaborate with both intramural and extramural investigators on large multicenter trials. We also participate in translation research with our colleagues in basic science labs using animal models and others to evaluate hypotheses generated from epidemiologic data. We are particularly interested in the genetic studies of these retinal diseases.

PIVOTAL EVENTS

During my training as an ophthalmologist, I was inspired by a mentor who conducted research in retinoblastoma. She emphasized the importance of research in moving forward in helping our patients. This was further emphasized while I was at the Wilmer Eye Institute, Johns Hopkins University, as a fellow working in the field of medical retina. This was a center that initiated a number of clinical studies, especially in the field of AMD and diabetic retinopathy.

MENTORING & WORK/LIFE BALANCE

I am particularly proud to be a director of the Medical Retina Fellowship program at NEI and a mentor to medical students from the Clinical Research Training Program (CRTP) and the Howard Hughes Scholars at NIH. They become a vital part of my group as they bring in new perspective and enthusiasm. They have taught me a great deal and we have enjoyed watching them grow in their academic and personal lives. I have been very fortunate to have supportive and talented colleagues and we work as a team on our research and our training programs.

The most difficult part of my life is balancing the work, the mentoring, and research with the family. I am very fortunate to have a very supportive husband and three daughters. We have learned the importance of patience, flexibility, and the ability to enjoy every part of life.

NEI

Mary Frances Cotch, Ph.D.

Chief, Epidemiology Branch, Division of Epidemiology and Clinical Applications

EDUCATION

Ph.D.: (Epidemiology) The Johns Hopkins University, 1988

B.A.: (Mathematics) University at Albany, State University of New York, 1983

RESEARCH INTERESTS

Epidemiology, understanding clinical and genetic aspects of disease within and across diverse populations, public health

PIVOTAL EVENTS

At the start of my professional career, I had the opportunity to work on AIDS surveillance efforts in the District of Columbia. It was early in the HIV epidemic, and this experience gave me a fundamental understanding of the various aspects of doing fieldwork in an inner-city setting under difficult conditions. It also made me realize how important empathy is in collecting detailed information from individuals within an ethnically and economically diverse community and gave me an appreciation for important human facets to consider in the design and implementation of preventive and therapeutic intervention programs.

MENTORING & WORK/LIFE BALANCE

While I was her student, my doctoral mentor had two children and still managed to advance from Assistant Professor to Full Professor. I learned from her the importance of organization, prioritization, and focus, and the need to select carefully among opportunities and to decline the rest. This approach worked for her, and I think it's worked for me. I was fortunate to have the opportunity to establish my research career before having a family, and although the balancing of family with professional responsibilities is a constant challenge, it helps to plan ahead and have flexible scheduling, good child care, an understanding and supportive family, and a sense of humor.

Chyren Hunter, Ph.D.

Program Manager, Retinal Neuroscience, Division of Extramural Research (Former); Deputy Director, Division of Extramural Activities and Training Officer, Extramural Research Programs, National Institute on Aging

EDUCATION

Ph.D.: (Biomedical Sciences, Neurobiology) Mount Sinai School of Medicine, City University of New York, 1988

B.A.: (Bio-Psychology) Wesleyan University, 1978

RESEARCH INTERESTS

Information processing and neural computation in sensory systems

PIVOTAL EVENTS

I have been blessed with caring family, mentors, and friends. Their support and guidance sustains me in my pursuit of new opportunities and challenges in my professional career. A pivotal event that affirmed my decision and desire to pursue a career in research occurred during my first postdoctoral position. This position was in a laboratory at the forefront of research on neurotransmitters in sensory systems. It was very gratifying to be fully engaged in this research and have my results selected for a platform session at an important international meeting. Adding new, significant knowledge to a field of research was a thrill; of personal significance is its reinforcement of my own internal barometer for success based on focused effort and hard work. This and other events helped confirm my interest in science and helped prepare me for my current position.

MENTORING & WORK/LIFE BALANCE

My responsibilities during my tenure at the National Eye Institute and currently at the National Institute on Aging include helping new investigators acquire research funding. In addition to basic information on grant deadlines and opportunities, the new investigator often also seeks advice on navigating professional and personal challenges to their career success. This has required me to take on mentoring and advisory roles. Although time-consuming and demanding, it is gratifying to follow the career of an investigator, seeing their scientific accomplishments and accolades accumulate. In my own experience, my professional responsibilities are both a joy and a burden when it comes to balancing family and career. The myriad duties and tasks I am responsible for are both a joy and a refuge, where I am capable and confident. Time spent in my

professional career also means less time spent accompanying a parent to appointments and insuring that the family unit is running smoothly and is happy and fulfilled. My siblings and extended family represent an essential support system in navigating my professional and familial responsibilities.

Maryann Redford, D.D.S.

Program Director, Collaborative Clinical Research, Division of Extramural Research

EDUCATION

Postdoctoral Fellowship: (Clinical Trials) The Johns Hopkins University School of Hygiene and Public Health, 1998–1999

M.P.H.: (Epidemiology) Uniformed Services University of the Health Sciences, 1990

D.D.S.: Georgetown University, 1983

B.S.: (Biology) Adelphi University, 1979

RESEARCH INTERESTS

Clinical research; multicenter clinical trials

PIVOTAL EVENTS

Several years after graduating from dental school, I was a practicing dentist and in the process of exploring the market to buy my own dental practice. In the course of that effort, I came to realize that, despite enjoying the interaction with patients, the day-to-day practice of clinical dentistry wasn't satisfying my intellectual curiosity. In reaching out for guidance, I was fortunate to be introduced to a network of dynamic female health professionals who had built upon their clinical training to pursue careers in public health and research. Their enthusiasm for research careers was contagious and inspiring. Although not completely sure of where an additional degree would take me, I followed the lead of these women and went back to school and earned a Masters in Public Health (M.P.H.).

One of the women I was lucky enough to be referred to was another dentist at NIH, Dushanka Kleinman. When we first met, Dushanka was a Program Director at the National Institute of Dental Research, but over the years, she assumed many leadership positions within the Institute and the U.S. Public Health Service. Dushanka encouraged me to earn the M.P.H. and guided me to my first position at NIH. She has continued to provide friendship and mentoring throughout my career and remains a valued friend and colleague.

NIH has provided a stimulating and nurturing environment for professional growth and development. Another pivotal opportunity occurred when I was provided support by NIH to complete a postdoctoral fellowship at the Johns Hopkins Center for Clinical Trials. I was truly fortunate to work closely with the founding father of the Center and a pioneer in clinical trials research, Curtis Meinert. Curt took me under his wing, oversaw my training, and mentored me in the art and science of multicenter clinical trials. This unique training experience enhanced my clinical research skills and launched me on an exciting and truly satisfying career track.

MENTORING & WORK/LIFE BALANCE

It was a phone call to a complete stranger that started me on my sojourn as an NIH scientist. I appreciate the many people who have positively influenced my career path and try to be mindful that I too may be serving as a role model. I also make it a practice to talk to children about what they want to be when they grow up—especially girls—hoping to elicit some interest in science and medicine, but also to encourage them to believe that they can successfully pursue any profession they choose.

My work with multicenter clinical trials involves considerable travel often impacting my weekends and occasional holidays. While this travel schedule takes away from family and personal time, the satisfaction I receive from working with these talented and dedicated study groups inspires me and more than makes up for the personal hardship.

National Heart, Lung, and Blood Institute

Elizabeth G. Nabel, M.D.

Director

EDUCATION

Postdoctoral Basic and Clinical Fellowship: (Cardiology) Brigham and Women's Hospital, Harvard Medical School, Boston, 1987

Postdoctoral Fellowship: (Hypertension) Brigham and Women's Hospital, Harvard Medical School, 1984

M.D.: Cornell University Medical College, 1981

B.A.: (Psychology) St. Olaf College, 1974

RESEARCH INTERESTS

For several decades, my research has focused on basic mechanisms of vascular diseases and on clinical research in the molecular and genetic targeting of treatments to blood vessel diseases. I have explored mechanisms of growth regulation of vascular smooth muscle cells by cell cycle proteins, and I have delineated the mechanisms that regulate the vascular proliferation and remodeling that lead to blood vessel blockages. Currently, my research focuses on the role of genetic factors in blood vessel diseases, including atherosclerosis and Hutchinson Gilford Progeria Syndrome, a rare, premature-aging syndrome.

PIVOTAL EVENTS

One important lesson that I have learned is to pay attention to patients' signs and symptoms, reflect upon them, and try to understand aspects that "don't make sense" through basic or clinical research. An example occurred during my early days as an Interventional Cardiologist at the University of Michigan when I took care of many patients with coronary blockages who required angioplasty. The high rates of coronary restenosis were not amenable to repeat device procedures, and I became intrigued by the biology of abnormal vascular remodeling, or coronary restenosis, that lead to their recurrent symptoms. These clinical insights have informed my basic and clinical research for the past 20 years.

MENTORING & WORK/LIFE BALANCE

Balancing a career with family responsibilities is a challenge for women and men in all professions. My generation of women has gone through a transition when women typically pursued

their careers at home (my mother's generation) to an expectation that women will lead fully balanced lives, integrating professional aspirations and family commitments (my daughters' generation). My advice to my daughters is to find your passion and then pursue it "with all you've got"—don't be afraid to live your dreams. You will find a way to balance your love of your career and your love of your family.

INSIGHTS

My second piece of advice is to find what you love to do, and then live it each and every day. It is about following your heart. I was lucky. I found my passion relatively early in life. I was always drawn to scientific research through my father, who was a chemist, but I also yearned for a human connection. I didn't decide to pursue medicine until late in college, which required me to take premedical courses as a postbaccalaureate. This was unusual at the time, especially for a woman, but fortunately is much more common now. I was drawn to cardiology during my fourth year of medical school, and my love for medicine was further solidified that year as I spent 6 months with the Flying Doctors Service in East Africa. My career has taken twists and turns. We all face bumps in the road as well as major hurdles. But what has sustained me is my passion for medicine, patient care, and science. So my message to you is to find what you love to do in medicine and then don't lose faith. Passion in your life's work will sustain you through the good times and the bad times. Your work is going to fill a large part of your life, and the only way to be truly satisfied is to do what you believe is great work. And the only way to do great work is to do what you love to do.

Susan Blakely Shurin, M.D.

Deputy Director

EDUCATION

Postdoctoral Fellowship: (Pediatric Hematology-Oncology) Children's Hospital Medical Center, Boston, 1974–1977

Residency: (Pediatrics) Johns Hopkins Hospital, 1971–1972; Boston City Hospital, 1972–1974

M.D.: The Johns Hopkins University School of Medicine, 1971

B.A.: (Biology) Harvard-Radcliffe, 1965

RESEARCH INTERESTS

Laboratory: Neutrophil physiology

Clinical: sickle cell disease, hemophilia, pediatric oncology, bioethics

PIVOTAL EVENTS

I had spectacular and inspired mentors in my family and among my teachers as a high school student, college undergraduate, and medical student. All encouraged me to do as much as I wanted, and to pursue a scientific and research career. As a fellow, I had a mentor who deliberately ensured that I learned useful political and management skills, and that I appreciated the importance of collaboration, networking, and building and repairing relationships (skills that are often neglected in the mentoring of young scientists).

MENTORING & WORK/LIFE BALANCE

My older son was born when I was a fourth-year medical student and my younger was born when I was chief resident in pediatrics. My entire professional career has been spent meeting both sets of responsibilities.

I have been an active and involved teacher since I was an intern in pediatrics. I was a director of a training program and clinical division for 17 years, responsible for training medical students, house officers, and fellows, as well as for nurturing the careers of junior faculty. Four of my students and trainees are now on the faculty at Case Western Reserve University; 4 of my Ph.D. and M.D./Ph.D. students are on the faculty at other universities; and 12 of my trainees (residents and students) are on the faculty at several hospitals and universities. In my present position, I mentor professional staff and trainees at the NHLBI.

INSIGHTS

My grandmother's sister was the second woman to graduate from Washington University Medical School (in 1922), and my grandfather was a pediatrician. Both assumed that a woman had to choose between a family and a career. Graduating from college, I was terrified that I would be bored or be stuck doing work that wasn't meaningful. I entered a medical school class that included 15 women out of 77 students. The prevailing attitude—even at Johns Hopkins, which was unusual in being willing to accept women—was that a woman (especially a married woman) was taking the place of a man, and did not really belong in medical school. I was determined not to have to choose between having a family and a career. I was fortunate not to require much sleep, and have never regretted my choices. What I have loved the most is the sense that in science and in medicine, there really are no upper limits—one never knows or masters everything, and there is always more to do.

As my career developed, I found that I needed new challenges to keep growing. It was challenging to find "next steps" that met

my needs and that were as meaningful as teaching, doing research, and taking care of patients. I have found my later career choices to be even more personal than my earlier ones, because they have required that I know more about myself than I knew when I entered the profession. My colleagues have had more varied success at making later career shifts than they have had with their more uniformly successful primary career choices.

Perhaps most important has been learning to recognize "success." Early on, others define success for you. As you mature, you really have to define it for yourself. I spent a lot of time trying not to look inward, because I felt that "it wasn't about me." I now recognize more vividly that an effective servant–leader must have insight and self-awareness that is an expansive, rather than an introspective, process. It is exciting to know that one can continue to grow life-long.

Cecilia Wen-Ya Lo, Ph.D.

Chief, Laboratory of Developmental Biology and Director, Genetics and Developmental Biology Center, Division of Intramural Research

EDUCATION

Postdoctoral Fellowship: Harvard Medical School, 1980

Ph.D.: (Cell and Developmental Biology) Rockefeller University, 1979

B.S.: (Biology) Massachusetts Institute of Technology, 1974

RESEARCH INTERESTS

The main research focus of my laboratory is on elucidating the genetic basis for human congenital heart disease. We use mouse models together with genetic, cell, and molecular, and imaging tools to unravel the developmental mechanisms that regulate and pattern cardiovascular development. Findings from our mouse models have provided the basis for several ongoing translational projects on children with complex congenital heart disease. The long-term goal of these studies is to help improve the standard of care and the prognosis for children with congenital heart disease.

PIVOTAL EVENTS

I had two teachers who really stimulated my interest in science and taught me how to think—a science teacher in 7th grade (Mr. Inguii in IS161), and an advanced placement (AP) biology teacher in 12th grade (Mrs. Shapiro at Bronx High School of Science). They both challenged me with questions for which there are not necessarily any answers and showed me how to think for myself. They showed me the scientific process at its best. They gave me the joy of learning, which to me is what a career in scientific research is all about.

MENTORING & WORK/LIFE BALANCE

Unfortunately, at my previous institution (University of Pennsylvania), there were no female role models. I was one of three female professors in the Biology Department, which comprised 28 faculty, and neither of the other two women had children. Perhaps because of this, I did not have children until long after I was tenured, a decision I regret now. However, at the time, I did not think having a family was an option given my dedication to my career. I felt it would have been unfair to have children because I thought I would not have sufficient time to devote to raising them. Knowing what I know now, I would have done some things much differently.

INSIGHTS

Being a woman in science is not easy, and in reality, being a scientist, male or female, is not easy. However, I do think women often carry more than half the load, if nothing else, at least during the 9 months of pregnancy! I think there is something to the old saying that if there is a will, there is a way. Clearly, many women have been able to balance having a family with a very successful career. Our Institute director, Dr. Nabel, is a great example! From my own personal experience, nothing can compare with having a child to love and watching him or her grow, and when you have one (or more), somehow you make it work. The key to success is being highly organized, both at home and at work, and having a network of support, either by way of school, spouse, family, friends, nannies, and/or babysitters. I think young women today need to know that it is possible to balance the demands of a successful career in science with those of a family—it just takes careful planning and purposeful action. The good news is that now there is much more public awareness and support for women who are balancing family life with a career. I have never regretted having my son, only regretted that I did not have him much earlier.

Helena O. Mishoe, Ph.D.

Rear Admiral, U.S. Public Health Service; Associate Director for Minority Health Affairs and Director, Office of Research Training and Minority Health

EDUCATION

M.P.H.: (Health Services Administration) Uniformed Services University School of Medicine, 2002

Postdoctoral Fellowship: NICDR, Laboratory of Oral Medicine, 1987–1988

Postdoctoral Fellowship: NIDDK, Laboratory of Chemical Biology, 1984–1987

Postdoctoral Fellowship: NIAID, Laboratory of Biology of Viruses, 1981–1984

Ph.D.: (Microbiology) Georgetown University, School of Medicine, 1981

B.S.: (Biology) Delaware State University, 1974

RESEARCH INTERESTS

My expertise is in molecular biology and gene expression in DNA tumor viruses, hemoglobinopathies, and diabetes. As a program director, my portfolio included stem cell biology and transplantation, and blood cell development. Of particular note, I developed an initiative entitled, "Stem Cell Transplantation to Establish Allochimerism" that was among the first efforts to focus on a nonmyeloablative approach to significantly reduce the morbidity and mortality associated with transplantation and provide a potentially curative therapeutic option previously unavailable to the hemoglobinopathy patient population.

PIVOTAL EVENTS

The most pivotal event that affected my success as a scientist was my commissioning into the United States Public Health Service (USPHS). The USPHS' day-to-day oversight and management is the responsibility of the U.S. Surgeon General. Our service is composed of 11 public health professional disciplines with the common mission of protecting the health and safety of the Nation. As a Scientist Officer, I have had the opportunity to work with scientists across the Nation and abroad in both agencies within and outside of the Department of Health and Human Services. This extraordinary exposure to other scientific disciplines with various perspectives in approaching scientific problems has been invaluable. In 2005, I was appointed by the Surgeon General to serve as Chief Scientist Officer. This opportunity has provided even greater exposure to view public health across the 11 professional disciplines. I was recently promoted to the rank of Assistant Surgeon General. The Public Health Service has provided me with a phenomenal skill set that has been central to my success as a scientist.

MENTORING & WORK/LIFE BALANCE

In contrast to the laboratory setting, the extramural program provides mentoring opportunities at various general schedule (GS) levels. Mentoring is very important because it allows me to listen, as well as share personal challenges, with the hope of helping others. Currently, I work most closely with students whose career goal is either graduate or medical school. In addition, I spend time sharing my experiences with mid- and senior-level individuals in the workplace. I also utilize mentors for guidance as well as share my failures and successes.

Regarding appropriate balance between professional responsibilities and family, I remained continuously challenged by this important need. With previous responsibilities to elderly parents that both suffered from stroke and related complications, to my own immediate family, and meeting professional responsibilities, I have sometimes felt that excellence in all areas is difficult to achieve. We must learn to take better care of ourselves so that we are able to serve others in their time of need.

INSIGHTS

I challenge myself daily to model the following values: leadership, integrity, excellence, and service. Illustrative of leadership and service, the following quote has become my motto,

"Because of my title, I was the first one to enter here. I shall be the last to go out."—*Duchesse d'Alencon, refusing help during a fire at a Paris charity bazaar in 1897.*

Regarding excellence, I routinely share the following with my students, other mentees, as well as a personal reminder, "It is better to be prepared and not have an opportunity than to have an opportunity and not be prepared." In addition, I encourage taking on new challenges, always be willing to volunteer, writing down your goals, and keeping track of your successes. Let each of us prepare to lend the next generation our hopes and dreams as others have so generously given to us.

NHLBI

Martha Vaughan, M.D.

Chief, Section on Metabolic Regulation, Translational Medicine Branch, Division of Intramural Research

EDUCATION

Research Fellow: Laboratory of Cellular Physiology, National Heart Institute, 1952–1954

Research Fellow: Department of Research Medicine, University of Pennsylvania, 1951–1952

Intern: Medical Service, New Haven Hospital, 1950–1951

Research Fellow: Department of Physiological Chemistry, Yale University, 1949

M.D.: Yale University School of Medicine, 1949

Ph.B.: University of Chicago, 1944

RESEARCH INTERESTS

Current research on signal transduction and ADP-ribosylation factors emerged more than 15 years ago from our earlier studies of mechanisms of action of hormones that involve GTP-binding regulatory proteins and of cholera toxin, which mimics certain effects of those hormones. After we showed that the toxin is an ADP-ribosyltransferase, others using the toxin enzyme as an experimental tool found that it was activated by a 20-kDa GTP-binding protein, which they named ADP-ribosylation factor, or ARF. To define the mechanism of its action on cholera toxin, we purified ARF—in fact two different ARFs—from bovine brain, cloned multiple ARFs from diverse organisms, and investigated gene structures to define three classes of human ARFs. This classification continues to provide a useful framework for relating and comparing the ubiquitous ARF molecules, which are so similar in all eukaryotes. When a critical role for two yeast ARFs in protein secretion and vesicular trafficking was reported, we initiated studies to identify guanine nucleotide-exchange proteins (GEPs) that would activate specific human ARFs and thereby regulate their action. We continue to demonstrate novel, often surprising, activities of some of these molecules that contain, in addition to the signature Sec7 domain responsible for GEP activity, several other potentially functional sequences. Thus far, we have characterized only a few of these and related even fewer to the ARF-activating function.

PIVOTAL EVENTS

This is impossible for me. I cannot decide at what date to place "success," or the "event(s)."

MENTORING & WORK/LIFE BALANCE

Throughout my life, at many different times and places, I have enjoyed and benefited from the kindness, assistance, and advice of teachers, colleagues, and friends. I cannot recall, however, any of these related to "balancing family with professional responsibilities." In the 1950s, it was not a problem that concerned many people. For the extent to which we succeeded in that endeavor, I am grateful to my husband, Jack Orloff, also a physician–scientist, and our three wonderful sons. It would not have been possible, however, had I not learned early in my life how responsible, caring families "work" to be that way.

INSIGHTS

My contributions as a "mentor or model for women who are going into science careers" are probably less than those of more recent medical school graduates, because during the first decades, none of my postdoctoral fellows or other professional colleagues were women. In those years, relatively few M.D.s, men or women, were involved in biomedical research. Then, as before and since, my goal was to help all students, fellows, and other coworkers to learn to make informed, thoughtful, and responsible decisions followed up by effective implementation, whether in the sphere of laboratory investigation, patient care, or personal and family concerns.

Diane E. Bild, M.D.

Deputy Director, Division of Prevention and Population Sciences

EDUCATION

M.P.H.: (Epidemiology) University of Michigan, 1984

Residency: (Internal Medicine) Medical College of Wisconsin, 1983

M.D.: University of Illinois, 1980

B.S.: (Biology) University of Illinois, 1976

RESEARCH INTERESTS

Through my training in Internal Medicine, I became interested in chronic diseases, such as diabetes, hypertension, and heart disease, which affected most of the patients I encountered. More important, I became interested in their prevention, which seemed to be a better way to improve quality of life than

treatment, which is often not completely effective. Through my training in epidemiology, I learned the methods for identifying risk factors for disease and later applied this to diabetes complications and heart disease. As the Project Officer for several large population-based epidemiology studies, I became interested in ethnic differences in cardiovascular disease (CVD) risk, prevention of CVD, and subclinical CVD measurement. One specific area of recent interest has been the identification of early or subclinical CVD through noninvasive testing, using these methods to understand the development of disease, and determining whether such tests have clinical value.

PIVOTAL EVENTS

The first turning point in my career came when I discovered the Public Health Service Epidemiology Training Program Fellowship, a program that encouraged and facilitated physicians to become epidemiologists. At the time, I was looking for a way to apply my internal medicine training to preventive medicine. That opportunity led me into the field of epidemiology and preventive medicine.

The second major turning point came several years later, when I accepted a position in the Division of Epidemiology and Clinical Applications at the National Heart, Lung, and Blood Institute, where I have remained for 18 years (though the Division has changed its name). NHLBI has provided a place for my career to develop both breadth and depth while also allowing balance in my life.

MENTORING & WORK/LIFE BALANCE

The key to balancing family and professional responsibilities is to have a lot of help at home. The flexibility that NIH offered was also very important. I worked part-time for several years to keep my work life and home life in balance. I have been able to meet the school bus, attend daytime school events, and be at home when needed. However, I have not identified any "magic bullet" that makes it all fall into place easily—it is hard work!

Dorothy Berlin Gail, Ph.D.

Chief, Lung Biology and Disease Branch, Division of Lung Diseases

EDUCATION

Ph.D.: (Physiology), Georgetown University, 1973

M.A.: (Physiology) Boston University, 1968

B.A.: (Zoology) Hunter College, 1966

RESEARCH INTERESTS

My laboratory research was in the field of lung cell biology. Specific areas included regulation of the lung surfactant system, nonrespiratory, or "metabolic" functions of lung cells, including protein synthesis and metabolism, and the effects of anesthetic agents on lung function. It has been extremely rewarding for me to have had the opportunity to continue to contribute to lung cell biology research as part of my responsibilities in the extramural program phase of my career. These responsibilities now include other areas of lung research as well, including acute lung injury, lung developmental biology, pediatric lung disease, interstitial lung diseases, and pulmonary vascular biology.

PIVOTAL EVENTS

In 1970, my husband and I moved to Washington, DC, so he could fulfill his military obligation. I met with Dr. Estelle Ramey, Professor of Physiology at Georgetown University, to ask about job openings for a laboratory technician. We talked for a while and then she leaned back and looked me over. "You do not want to be a technician," she informed me, "you want to go for your Ph.D." I hesitantly agreed, but told her that I would be in DC for 2 years and could not possibly complete my Ph.D. in time. "Nonsense!!" she said. "Just get started. It will be ok. Trust me. Find an advisor, and get to work!"

And I did. I found an advisor, received my Ph.D., and worked in research and then as a health scientist administrator and Branch Chief at the NHLBI. None of this would have been possible without Dr. Ramey's support and encouragement.

MENTORING & WORK/LIFE BALANCE

Clearly, mentoring is a key factor in building one's career. Everyone needs a mentor, and ideally, more than one, in every career phase. My thesis advisor and his colleague and wife have been my mentors for over 30 years. Their support has been invaluable. I very much enjoy mentoring young people who come to work in the Branch and the Division. Several have gone onto

become professionals in science or other fields. Changes in the workplace including flextime and telecommuting are helping staff deal with challenges of balancing family. These are great innovations, which I strongly support.

Alice M. Mascette, M.D.

Chief, Heart Failure & Arrhythmias Branch, Division of Cardiovascular Diseases

EDUCATION

Fellowship: (Cardiology) Walter Reed Army Medical Center, 1987

Residency: (Internal Medicine) Walter Reed Army Medical Center, 1983

M.D.: Georgetown University School of Medicine, 1980

B.A.: (Biology and Psychology) Cornell University, 1976

RESEARCH INTERESTS

I am a Program Director of the Heart Failure Clinical Research Network, a collaboration of eight regional coordinating centers and a data coordinating center established to promote research in the diagnosis and management of heart failure.

I am also the Chief of the Heart Failure & Arrhythmias Branch, which conducts and manages an integrated basic and clinical research program to study normal cardiac function and pathogenesis to improve diagnosis, treatment, and prevention of heart failure and arrhythmias. In addition, the branch supports research in myocardial protection and resuscitation science.

PIVOTAL EVENTS

I was the first woman selected to the cardiology fellowship program at Walter Reed, and 11 years later, was the first woman to be selected as a teaching chief, directing a fellowship training program, in the Army. Being the first of anything imposes a certain set of performance standards that compel one to do the best job possible. I thoroughly enjoyed the process of clinical teaching and training and find it one of the most rewarding aspects of medicine. The transition to the much broader arena of multicenter clinical trials at the NHLBI translates to a far greater impact on public health and clinical practice.

MENTORING & WORK/LIFE BALANCE

Women still constitute a definite minority of cardiologists and as long as that's the case, I think there will be a chain of mentoring. I was inspired by the female cardiologist (Dr. Esther Ocuin) who helped teach me angiography and angioplasty in the catheterization laboratory and I helped some young women with their own career choice of cardiology who have gone onto be mentors for yet another generation of women. I was sent a newspaper article recently about a woman I mentored and the women in cardiology she went onto influence. So that's a nice example of a direct lineage of women helping women in their career choice in cardiology.

The field of clinical interventional cardiology is a demanding one in terms of hours, call schedules, emergencies, and the physical demands of working at meticulous procedures while wearing a leaded apron and jacket. For many women, the time spent doing procedures involving radiation makes planning a family complicated. Luckily, the field of cardiology is broad with alternate areas of specialization that can provide a work environment that can be made more family-friendly. The type of work that we do on the extramural side of NHLBI creating and managing new initiatives and clinical trials provides a wonderful opportunity to approximate the type of work week that most people have and allows the opportunity to have a richer family life.

Susan E. Old, Ph.D.

Acting Deputy Director, Division of Cardiovascular Diseases

EDUCATION

Senior Staff Fellow: National Eye Institute, NIH, 1991–1994

Staff Fellow: National Eye Institute, NIH, 1989–1991

Postdoctoral Research Fellow: Division of Pediatric Neurology, Columbia University College of Physicians & Surgeons, 1987–1988

Ph.D.: (Human Genetics) University of Michigan, 1987

B.S.: (Biological Sciences) University of California, Irvine, 1981

RESEARCH INTERESTS

I began my research experience as an undergraduate, and continued as a research technician, prior to going to graduate school in human genetics. My hands-on research experiences were in molecular genetics and protein chemistry. Since taking on an extramural scientist position, my areas of scientific interest have expanded to include genetics, genomics, proteomics, bioinformatics, and systems biology.

PIVOTAL EVENTS

Early in my career, I moved from doing bench science to science management and administration. This led to tremendous scientific growth and career opportunities. The chance to shape research direction, enhance the scientific enterprise, and explore creative leadership models provides great personal and career satisfaction. I have found the keys to being successful are mentorship, networking, and team building. Developing viable and positive mentoring relationships is essential. I was fortunate to engage successful individuals in mentoring relationships and I took advantage of the guidance and opportunities they provided. In addition, opportunities to interact with influential and creative people within and across the NIH Institutes/Centers, as well as with leading academic scientists, were instrumental for success. Early in my career, I participated in and led trans-NIH and trans-NHLBI groups (both strategic vision and program management). This facilitated access to innovative thinking and enabled my ability to move new ideas forward.

MENTORING & WORK/LIFE BALANCE

I attribute much of my success to finding and engaging successful individuals in a mentoring relationship. Mentoring takes the time and energy of everyone involved, so having clear goals and expectations is helpful. In turn, I have mentored others to help them reach their career goals. Being able to help others also helps me focus on and grow toward my career goals.

I have been very fortunate to be able to balance family with my professional responsibilities. Having priorities is important, and my family is at the top of my priority list. I have been allowed the flexibility, both at home and at work, to be able to participate fully in my children's activities. I have tried to provide similar flexibility for those who work with me. The ability to be organized and multitask, as well as having people who support you, makes the balancing act possible.

Gail D. Pearson, M.D., Sc.D.

Chief, Heart Development and Structural Diseases Branch, Division of Cardiovascular Diseases

EDUCATION

Fellowship: (Pediatric Cardiology) Children's National Medical Center, 1994–1997

Internship and residency: (Pediatrics) Children's National Medical Center, 1991–1994

M.D.: The Johns Hopkins University School of Medicine, 1991

Sc.D.: (Health Policy and Economics) The Johns Hopkins University School of Hygiene and Public Health, 1990

M.P.A.: (Health Care Management) American University, 1978

B.A.: (Sociology) University of Michigan, 1974

RESEARCH INTERESTS

Pediatric cardiology encompasses many different conditions with varied physiological implications for the affected children. Systematic evidence on which to make treatment decisions has been limited by small numbers of patients and the absence of an infrastructure to support multicenter studies. My principal research activity here at NHLBI has been to establish and participate as a scientific partner in the Pediatric Heart Network, www.PediatricHeartNetwork.org. Since 2001, we have designed and launched four randomized trials and three observational studies. One of the trials, a randomized comparison of two surgical strategies for the first-stage repair of hypoplastic left heart syndrome, is a landmark for the field because of the surgical community's recommendation for and agreement to participate in randomization. Another trial, comparing the effects of losartan vs. atenolol on aortic root growth in individuals with Marfan syndrome, is based on exciting findings in mouse models of Marfan syndrome and offers the unique opportunity to determine whether these findings can be translated to children and young adults.

I am interested in all aspects of pediatric translational and clinical research, and also represent NHLBI in several pediatric scientific and policy activities across NIH, and with outside groups such as the American Heart Association.

PIVOTAL EVENTS

As a pediatric cardiology fellow, I was often frustrated by the need to base medical decisions on experience and anecdote rather than systematic evidence, and envisioned an academic career that would help change this. My career path diverged, however, when the call came from NHLBI to discuss joining their extramural staff. I recalled the words of a medical school mentor who had encouraged me to consider many career options, so I approached this opportunity with curiosity and an open mind. Joining NHLBI and developing the Pediatric Heart Network, while also continuing to treat children with heart disease, have given me unprecedented opportunities to bring evidence-based medicine to pediatric cardiology. The Network opens many scientific doors and allows me to work with and learn from many talented individuals, and my patients provide an essential perspective that informs the clinical research.

MENTORING & WORK/LIFE BALANCE

I see life as a continuous learning experience, so for me, being mentored is an ongoing process involving multiple relationships over time. I have received superb advice from colleagues and friends and as a result, have learned the value of thinking outside the box and forging novel collaborations. Mentoring others is also an important part of my professional life, and is as valuable to me as the advice I receive from others.

Meeting family and professional obligations requires dexterous juggling and accepting that the occasional ball will fall on your head. Having a wonderful husband who is a full partner in parenting helps enormously, and having shared interests makes family time more cohesive. I have learned to delegate and use electronic resources to improve efficiency at home and at work. Finally, I have been fortunate to work in an environment that supports professional flexibility in the interests of improving science.

Denise G. Simons-Morton, M.D., Ph.D.

Senior Scientific Advisor,
Division of Prevention and Population Sciences

EDUCATION

Ph.D.: (Epidemiology, minor in Biostatistics) University of Texas School of Public Health, Houston, 1991

Postdoctoral Fellow: Training Program in Behavioral Research (NIH Training Grant), Center for Health Promotion R&D, University of Texas Health Science Center, Houston, 1987–1989

M.P.H.: The Johns Hopkins University School of Hygiene and Public Health, 1982

Resident: (Preventive Medicine) University of Maryland School of Medicine, 1980–1983

Residency: (Family Practice) University of Maryland, School of Medicine, 1980–1981

M.D.: University of Maryland School of Medicine, Baltimore, MD, 1979

B.S.: (Zoology & Psychology) University of Maryland, College Park, 1973

RESEARCH INTERESTS

I have been a Project Officer and scientific collaborator on numerous clinical trials relevant to prevention of cardiovascular diseases. Topics include effects of dietary interventions on blood cholesterol or blood pressure, effects of treatment strategies for diabetes on cardiovascular disease events, effects of behavioral approaches on healthcare-seeking behaviors, and approaches to improve cardiovascular-related health behaviors. I am an expert in clinical-trial design, including trials using individual-level as well as group-level randomization. My primary research interests are clinical trials testing lifestyle approaches and risk factor treatments for primary prevention of cardiovascular disease.

PIVOTAL EVENTS

My sixth-grade teacher, Mr. Sell, gave me C's because he said I could "do better." This was very motivating—as I really wanted As. I worked harder as a consequence, and continue to work hard until this day. My Ph.D. advisor, Fred Annegers, always paused to think before he answered a student's questions, resulting in very thoughtful answers. This was a good role model, and one I hope one day to emulate. My husband, Bruce Si-

mons-Morton, himself a behavioral scientist, taught me about the complex nature of behaviors as they relate to health. I believe that behaviors strongly affect health; this area is a major focus of my research activities.

MENTORING & WORK/LIFE BALANCE

As a junior faculty member in academia, I had no real mentor. It was difficult to figure out what to do to advance my career. However, when I came to the NHLBI, Jeffrey Cutler became my supervisor and mentor. I learned a great deal from him about the importance of a scientific evidence base for new research and the need to attend to details.

Balancing family with professional responsibilities has been a struggle throughout my two children's lives, from infancy through teenage years. Being able to equally split household responsibilities was extremely important, as was making it a priority to leave the office at a reasonable hour. Now that my children have left home, I try to balance professional responsibilities with personal growth activities. I believe we need a balanced life for mental and physical health. Achieving this, however, sometimes requires forgoing professional opportunities.

Sonia I. Skarlatos, Ph.D.

Acting Director, Division of Cardiovascular Diseases

EDUCATION

Senior Staff Fellow: (Atherosclerosis) NIH/NHLBI, 1985–1992

Ph.D.: (Physiology) Pennsylvania State University, 1985

M.S.: (Biology) Shippensburg State University, 1982

B.S.: (Biology) Shippensburg State University, 1981

RESEARCH INTERESTS

I became involved in research on lipids and lipoproteins early in my career within the intramural research program at the NHLBI. In 1992, I moved to the NHLBI Extramural Program where I continued my interest in cardiovascular diseases by developing, overseeing, and managing programs in atherosclerosis, peripheral arterial disease, and gene therapy. As the gene therapy coordinator, I ensure proper monitoring and evaluation of ongoing NHLBI gene therapy clinical trials.

PIVOTAL EVENTS

When I moved to the Extramural Program, I had experience in planning experiments, analyzing data, and writing manuscripts, but I had no research administration experience. Thus, my first goal was to obtain fundamental knowledge and perspectives on how to successfully perform my duties as a health scientist administrator (HSA). I successfully competed for a position in the NIH Health Scientist Administrator Program. This 1-year program was essential for my career, because it provided an excellent knowledge of my position and a network of colleagues across the NIH. However, the most pivotal event in my career was to take the initiative to identify and arrange to have an outstanding mentor. From the start, my mentor involved me in promising and high-visibility programs, gave me the opportunity to assume responsibility for these programs, provided access to senior leadership in the Division and the Institute, and provided insight into the dynamics of NIH. With hard work coupled with creative approaches to problems, senior leadership recognized my capabilities. This was the beginning of a very rewarding career as an extramural scientist: from HSA to acting director of an extramural division that supports over $1.3 billion in grants and contracts.

MENTORING & WORK/LIFE BALANCE

Over the years, I have enjoyed mentoring staff at different levels—from support staff to professional staff. I have engaged staff in helping me with different projects, motivated them to develop their own projects, and encouraged them to be proactive in seeking new responsibilities. As a woman scientist, it was not always easy to balance family and professional responsibilities. I already had a family by the time I went to graduate school, so I learned to manage my time well. The ability to plan ahead and organize my day-to-day activities became very useful when I started as a fellow at the NIH, and later as an HSA. Experiments never start at 9 am or end at 5 pm, nor do the responsibilities of senior-level extramural positions. In addition, keeping physically fit by running three miles each day has given me the stamina to successfully meet professional and family demands.

NHLBI

Gail G. Weinmann, M.D.

Deputy Director, Division of Lung Diseases

EDUCATION

Pulmonary Research Fellow: The Johns Hopkins University School of Hygiene and Public Health, 1981–1983

Pulmonary Clinical Fellow: The Johns Hopkins University Hospital, 1980–1981

Pulmonary Research Fellow: Cardiovascular Research Institute, San Francisco, CA, 1979–1980

Resident: (Straight Medicine) University of California Medical Institution, San Francisco, CA, 1978–1979

Resident: (Straight Medicine) Georgetown University Hospital, 1976–1978

M.D.: Cornell University Medical College, New York, New York, 1976

A.B.: (Biology) Barnard College, New York, New York, 1972

RESEARCH INTERESTS

My past research, while in academics, included high-frequency ventilation, airway control, and the health effects of ground-level ozone exposure. Initially, after arriving at the NIH, I supervised chronic obstructive pulmonary disease (COPD) and environmental lung diseases research, followed by research across airways diseases, including asthma, COPD, and cystic fibrosis, and now across all lung diseases. The research varies from basic mechanisms to phase III trials evaluating new therapies, and includes training and educational activities.

PIVOTAL EVENTS

Becoming a scientist is a life-long process with many branch points. An important factor was always being in an environment in which research was a top priority. These environments provided support, infrastructure, mentors, and like-minded colleagues, all of which create a rich basis from which to grow.

MENTORING & WORK/LIFE BALANCE

Mentors are extremely important and they are everywhere. One mentor may be for the overall scientific direction, one for hands-on help in the lab, and another for ways to mentor others. A champion is important early in a career as an advocate and guide through the initial steps on the career ladder.

When you love what you do, a balance between family and work comes naturally, but will require decisions, based upon each personal situation and preferences. One family may be content with and able to afford outside child or parent care, and another may not. One family may choose a transcontinental commute, another a transcontinental move. Work and family are always evolving and full of surprises, so an open mind and flexibility are important.

National Human Genome Research Institute

Joan Ellen Bailey-Wilson, Ph.D.

Senior Investigator and Head, Statistical Genetics Section and Co-Chief, Inherited Disease Research Branch, Division of Intramural Research

EDUCATION

Postdoctoral Training: (Statistical Genetics) Louisiana State University Medical Center, 1980–1982

Ph.D.: (Medical Genetics/Biomathematics) Indiana University, 1981

B.A.: (Biology) Western Maryland College, 1975

RESEARCH INTERESTS

Genetic epidemiology of complex diseases; genetic susceptibility to lung cancer, prostate cancer, breast cancer, myopia, and other eye diseases, and cleft lip and palate; gene–environment interactions; development and evaluation of statistical genetics methods

PIVOTAL EVENTS

My parents encouraged my early interests in science and, at a time when it was uncommon, never suggested that a little girl should NOT want a chemistry set and a microscope for Christmas! They sacrificed to get them for me and to help me attain my goals. Having grown up during the Depression, they always said that a good education was the one thing no one could take away from you! Their pride in my every accomplishment and their unfailing belief that I could be a scientist were critical to my success. In college, Dr. Jean Kerschner, a wonderful female geneticist, ignited my interest in genetics. My graduate school mentors, Drs. Joe Christian and John and Judy Gersting, furthered my interests in statistical genetics and computing. Finally, Dr. Robert Elston, my postdoctoral advisor, long-term friend, and colleague increased my statistical knowledge, my ability to think critically, and my mentoring abilities.

MENTORING & WORK/LIFE BALANCE

Mentoring young scientists is something I enjoy immensely! I was so lucky to have wonderful mentors, who guided me in science and in how to balance family and career. My husband (a statistical geneticist and my co-Branch Chief) and I have always considered ourselves colleagues rather than competitors, and we share family responsibilities equally. We owe a lot of that to our mentors, who were all devoted to their families. We learned the team approach from the Gerstings, mathematics/computer scientists at our graduate school who were passionate about their careers, each other, and their two wonderful little boys!

From Robert Elston (with four great kids) I learned to review/write/edit articles while waiting at ballet or soccer practice—so you can be there for your family, and still get your work done efficiently! But most importantly, don't expect your house or life to be perfect, and don't sweat the small stuff!

INSIGHTS

When I was growing up in the 1950s and 1960s, it was unusual for a woman to have a career. A high school guidance counselor advised me that college was a waste of time since I would "just get married and have kids." My response was, "Why can't I do ALL of that?" I have seen science, and our culture, change so that now my daughter (like my son) has never been told she "can't" pursue her career of choice. Most of my colleagues, both male and female, have spouses/partners and children. As current President of the International Genetic Epidemiology Society, collaborator on successful grants, tenured Senior Investigator at the NIH with over 150 publications, and a devoted wife and mother, I hope that young people will see that they can have a good life AND be a good scientist! You CAN do "all of that" and enjoy it!

Elaine A. Ostrander, Ph.D.

Senior Investigator and Head, Comparative Genetics Section and Chief, Cancer Genetics Branch, Division of Intramural Research

EDUCATION

Ph.D.: (Microbiology and Immunology)
Oregon Health Services University, 1987

B.S.: (Medical Technology)
University of Washington, 1981

RESEARCH INTERESTS

My laboratory is broadly interested in the question of mammalian genetic variation and we are using two approaches to explore this topic. Advances from the human genome project have proven critical to our studies of genetic variants that contribute to breast and prostate cancer in high-risk families and individuals from the general population. Our work has led to clearer understanding of the role of the BRCA1 and BRCA2 genes, as well as an understanding of factors that play a role in prostate cancer susceptibility, aggressiveness, or progression.

In a second avenue of work, we have led the field in developing the canine system as a model for understanding the role of genetic variation in disease susceptibility, morphology, and behavior. Toward that end, we have and continue to identify genes contributing to diseases of interest for both humans and companion animals that have proven difficult to study in small, limited, human families. Our most recent work has focused on finding genes that control growth regulation in dog breeds differing in size and shape which, when gone awry, likely play a role in cancer susceptibility and progression.

PIVOTAL EVENTS

While finalizing my Ph.D. thesis, I had succeeded in isolating 1Đg of an extremely valuable DNA sample. As I admired my handiwork, the tube slipped, spilling all over my laboratory bench paper. Hearing my screams, a graduate student from an adjacent lab ran over and announced that we should try to save the sample. In two sleepless days, we reisolated 95 percent of the DNA leading to a published paper aptly titled, "Isolation of Critical DNA Samples from Laboratory Bench Paper" by Ostrander, Maslen, and Hallick.

That single experience bonded us, leading to a 25-year personal and professional relationship that encompasses our experimental quests, manuscript euphoria, grant writing struggles, family life frustrations, and marital puzzles. It does not take an army of cheerleaders to survive as a scientist; it takes just one strong friendship born of common experiences, compassion, shared goals, and reciprocal mentorship. I am forever grateful I found that.

MENTORING & WORK/LIFE BALANCE

While pregnant with my first child, I developed complications. As I lay in the hospital listening to my baby's heartbeat, one of my unbelievably energetic graduate students walked in and announced that since I was hospitalized and away from the phone, it would be a good chance for us to work on a paper together. I was momentarily taken aback, but then decided why not? We got the paper done, the student is now a fellow at Harvard, and I have learned so much from my students about how to just get things done. Each day presents a set of conflicting choices and there is no magic formula for organizing your time. My advice to other women is to never feel guilty, integrate your family into your work life as much as possible, and see each challenge as an opportunity to grow together.

INSIGHTS

I have been very fortunate throughout my career to work with extremely talented people at all levels. These relationships and scientific collaborations have resulted in numerous discoveries that have been published in high-impact journals. These accomplishments have surpassed my wildest imagination, and I owe it to my family and the many scientific collaborators I have been fortunate to work with over the last several years.

Throughout my research career, I've learned three important things. First, your family must always be your first priority. They are the only people who love you unconditionally and without that knowledge, you will ultimately falter. Second, talented and generous collaborators are a rarity and need to be treated as such. And lastly, many of my most significant papers were taken up a notch by the contributions of specialists in statistical genetics, epidemiology, or phylogenetics, and out of those experiences have been born life-long friendships and collaborations.

It is also important to note that the questions you seek to answer at the start of your career may not be the ones that present themselves to you on a silver platter. Flexibility is key. Science is about satisfying curiosities, making novel discoveries, and for a few moments every now and again, being the only person on the planet who knows how something works. Having a job where your goal is to understand how life works is an unbelievable privilege. I want my daughters to know I made a difference in the world, and in doing so, I want to see them shoot for the stars as well.

Jane Louise Peterson, Ph.D.

Program Director, Large-scale Sequencing Program and Associate Director, Division of Extramural Research

EDUCATION

Postdoctorate: (Molecular Biophysics and Biochemistry) Yale University, 1975–1978

Ph.D.: (Molecular, Cellular and Developmental Biology) University of Colorado, 1975

B.S.: (Biology) Western College, 1969

RESEARCH INTERESTS

Genomics: Comparative sequencing, medical sequencing, Human Microbiome Project, The Cancer Genome Atlas, Knockout Mouse Project

PIVOTAL EVENT

My career in genomics has been guided by a series of experiences. I was fortunate that my early interests led to work in laboratories where I studied chromatin. When I made the decision to leave the bench, my first science administration experience at NSF was quite broad and included working with a "Women in Science" program. I then moved to NIGMS to a program focused on chromatin research. When the idea for the Human Genome Project (HGP) arose at NIH, its initial home was in NIGMS, where I was working in a small DNA sequencing program. As the project evolved, I was fortunate to work on it, resulting in 15 years of one "pivotal" event after another. I owe my success largely to inspiration and guidance from the leaders I have been fortunate to work with: Dr. Watson, Dr. Collins, and the outstanding grantees in genomic sequencing.

MENTORING & WORK/LIFE BALANCE

Mentoring throughout my career has allowed me to help women find their places in science. With each encounter, I learn more about life, science, people, careers, and opportunities. Young women today are savvier about career paths than I was at their ages and I often get more from the interactions than I give! Mentoring is a lot of fun and it gives me tremendous energy for my own work.

In raising two children, I experienced the challenges of balancing my commitment to science and home. It is demanding and requires sacrifices, but is rewarded by the joy of seeing one's children find their own passions. One child shares my love of science (medical student) and the other, who heard "genome politics" at dinner, developed a passion for politics (environmental lobbyist). As is often true, this balancing act could not have happened without the support of my husband and children.

INSIGHTS

The experience of watching the HGP develop from an idea to early implementation and then through a rapid redefinition as the technology and strategy changed, has been the journey of a lifetime. The experience of working on a new, controversial, and high-profile project came with challenges and demanded innovative approaches as compared to more established programs. For example, working on the HGP required that I develop an ability to change directions frequently, take risks, think innovatively about how to get the job done, maximize flexibility within a bureaucracy, and use and extend my scientific background in nontraditional ways. Subsequently, I have had the opportunity to lead several trans-NIH projects that grew out of the HGP. This has given me the opportunity to continue to use these skills in other NIH programs. Learning these lessons and applying them has made for a rewarding, fun, and exciting career. I feel fortunate that now I can share the excitement that I have for genomics with a new generation of students through lectures and personal interactions.

NHGRI

Pamela L. Schwartzberg, M.D., Ph.D.

Senior Investigator and Head, Cell Signaling Section, Genetic Disease Research Branch, Division of Intramural Research

EDUCATION

Postdoctoral Fellowship: National Cancer Institute 1993–1997

Internship: (Pediatrics) Boston Children's Hospital, 1993

M.D./Ph.D.: (Molecular Biology) Columbia University College of Physicians and Surgeons, 1992

B.S.: (Biochemistry) Princeton University, 1981

RESEARCH INTERESTS

Lymphocyte signal transduction, T cell differentiation, immune responses to infectious disease, disease mechanisms in primary immunodeficiencies

PIVOTAL EVENTS

During my training, I have been fortunate to have a series of wonderful mentors, including Stephen Goff, Elizabeth Robertson, and Harold Varmus. Among the most important gifts they gave me in my training was the freedom to pursue my own interests and projects. Even as a technician working for Steve Goff, I was told, "go to the library and figure out what you would like to do." There is a tremendous amount of trust and responsibility that is bestowed upon you when you are given this gift early in your career and ultimately, I think that having that freedom is what allows you to become an independent scientist. To be successful in science, I always think one has to be "bitten by the scientific bug." Being able to take ownership of my work early on certainly had a tremendous influence on my interest and drive in science.

MENTORING & WORK/LIFE BALANCE

I try to instill in my trainees the excitement and wonder of science, and also provide the support and freedom to pursue their own interests. It takes a certain amount of trust, but I think that is important for your trainees and having been given that gift, it is one that I hope to share. I suspect that I will always find balancing family and science a challenge. Science for me can be all-encompassing—I never have enough time to learn all I want. Having said that, I would find balancing near impossible without the strong support of my partner, Alan Kimmel, who is also an investigator at NIH and who has been a tremendous intellectual and emotional support, in addition to being an incredible father. For me, it has been essential to have strong support systems both at home and from colleagues at work, and I have been fortunate.

INSIGHTS

One of the most important influences on my career has been the decision to join the intramural faculty of the NIH. The interactive environment and collegiality of the intramural program at NIH, combined with its broad depth and diverse range of interests, has provided me with a wealth of scientific interactions, and has greatly contributed to the direction and success of my work. In particular, both the NHGRI and the immunological community on campus have incredible strengths and have provided me with wonderful colleagues and a great intellectual community. NIH is a great place to do science and I feel very fortunate to have the opportunity to work here.

Julia Angela Segre, Ph.D.

Senior Investigator and Head, Epithelial Biology Section, Genetics and Molecular Biology Branch, Division of Intramural Research

EDUCATION

Postdoctoral Training: (Molecular Genetics and Cell Biology) University of Chicago, 1996–2000

Ph.D.: (Genetics) MIT, 1996

B.A.: (Mathematics) Amherst College, 1987

RESEARCH INTERESTS

Gene-environment interactions at the skin surface that result in dermatologic disorders

PIVOTAL EVENTS

Strangely, the event with the most impact on my success as a scientist was the most devastating. I was "scooped" on my Ph.D. thesis research, which means that just as I was finalizing my research discovery, I found that similar experiments were being published by a competing group. Although it was initially painful, I never regretted my hard work and personal dedication, because through this I found the love of scientific inquiry. From that moment on, I have always been sure that my goal as a scientist is to satisfy my own curiosity and not for glory. This freedom has enabled me to confidently strive to answer challenging questions, to follow my own interests, and not worry if the path is unconventional.

MENTORING & WORK/LIFE BALANCE

I've been lucky or perhaps astute enough to only work for and with people whom I respect tremendously, which includes during my Ph.D. and postdoctoral training and in my current position. My grandparents, parents, sisters, and husband have always been my greatest supporters, sharing my respect for intellectual pursuits and providing the environment in which I can "go for it." While on tenure-track, I've had two daughters (now aged 3 and 5) and I've loved being a mom more than I ever imagined. There's no substitute for time spent with my daughters, so I never compromise this. Although it is a constant juggling act, I remain deeply committed to being a scientist, mentor, mentee, wife, daughter, granddaughter, sister and mother.

INSIGHTS

I was a mathematics major in college, and I was the first woman in my department to be awarded summa cum laude on my undergraduate thesis. Although there were very few other women in my math and physics classes, these skills have prevented me from being intimidated by data analysis that requires quantitative or computational skills. I've never believed that "girls can't do math."

I've really valued my friendships with other women scientists who have opened up their lives to me. These friendships have guided and supported me through challenges including job searches, returning to work after childbirth, and the tenure process. The world is changing and senior male colleagues, who have their own daughters trying to combine successful careers and families, have been some of my most unexpected, but strongest, supporters.

Laura Elnitski, Ph.D.

Investigator and Head, Genomic Functional Analysis Section, Genome Technology Branch, Division of Intramural Research

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EDUCATION

National Research Service Award (NRSA) Postdoctoral Fellowship: (Comparative Genomics) Pennsylvania State University, 2001–2004

Ph.D.: (Biochemistry and Molecular Biology) Pennsylvania State University, 1998

B.S.: (Molecular and Cellular Biology) Pennsylvania State University, 1991

RESEARCH INTERESTS

The major aims of the Genomic Functional Analysis Section are to identify cis- and trans-acting functional elements in vertebrate genomes. Approaches I use to find these elements incorporate computational and experimental components, including whole-genome comparative analyses, machine-learning techniques, and laboratory testing. Major projects in my group aim to (1) identify bidirectional promoters in the human genome and elucidate their involvement in cancer, (2) understand the relationship between sequence-based regulatory features and expression patterns from alternative promoters, and (3) develop high-throughput assays to identify silencer elements throughout the human genome.

PIVOTAL EVENTS

Early in my graduate career, I transferred from an esteemed, scientific training program to a smaller academic department. Although the scope and opportunities differed in my new environment, I found myself surrounded by exuberant scientists, whose mentoring was pivotal toward my scientific development. Over the course of those ensuing years, whole-genome comparative analysis projects were developing in the research community. The experience of participating in those projects meant that I could observe how statisticians, geneticists, and programmers conducted their research. I watched as leaders in the field assembled enormous amounts of data into focused conclusions. I also met colleagues with whom I have forged long-term collaborations. No matter which career stage I was in (including now), I found motivation in the idea of making significant contributions toward the betterment of human health.

MENTORING & WORK/LIFE BALANCE

The best mentoring prepares trainees for success on their own. When I mentor people, I strive to make them aware of the expectations of the research community: strong basic skills, a professional network, and the ability to recognize opportunities. Most importantly, I encourage people to cultivate independent thoughts and have confidence in their own ideas. Mentors provide the opportunity to excel, yet the motivation necessary for achievement rests within one's self. Patience and perseverance are the best lessons I've learned while pursuing a research career.

Academic research frequently requires exceptional hours to fulfill the obligations of work, sometimes creating a direct conflict with the expectations of the outside world. I find that no magic formula exists for all situations, and the best solution is to determine one's own comfortable balance between work, family, and self. Prioritize projects for work, form a support system to help with children, and seek advice when needed.

NHGRI

Bettie J. Graham, Ph.D.

Associate Director and Program Director, Division of Extramural Research

EDUCATION

Grants Associate Program: NIH, 1978–1979

Staff Fellow: (DNA Viruses) National Cancer Institute, 1974–1978

Postdoctoral Fellowship: (RNA Tumor Viruses) Albert Einstein College of Medicine, 1971–1974

Ph.D.: (Virology) Baylor College of Medicine, 1971

B.S.: (Biology/Chemistry) Texas Southern University, 1962

RESEARCH INTERESTS

Genomics, technology development for genomic sciences, and training and career development.

PIVOTAL EVENTS

I was very fortunate to have parents who valued education and supported my thirst for knowledge. In my early years, I had outstanding and committed teachers who instilled the importance of learning the basics, demanded excellence, and provided extracurricular activities in mathematics and the sciences. My first introduction to research was as an undergraduate, and while I did not participate in my advisor's research project, I was exposed to the research environment. I received my first introduction to research at Baylor, where I received my doctoral degree. The quality of the faculty and the range of research topics provided me with a rich introduction to virology. My mentor was very involved in ensuring that my academic and career development goals equaled or exceeded my expectations. Throughout my career, all my mentors have been outstanding, supportive, and committed to my success as a scientist (research and management).

MENTORING & WORK/LIFE BALANCE

Mentoring complements didactic and on-the-job training. It provides direction to one's career. Without mentoring, individuals may find the path that leads to their success uncertain and often with barriers that are difficult to overcome. Mentoring is important at all stages of one's career. In the case of the extramural program, new health scientist administrators who come from academia or industry need an orientation to NIH's extramural programs in order to make their tasks easier. Given my wealth of knowledge and experience about the NIH, I provide such an orientation and am always available to provide advice to new and seasoned health scientist administrators.

Marjan Huizing, Ph.D.

Associate Investigator and Head, Cell Biology of Metabolic Disorders Unit, Medical Genetics Branch, Division of Intramural Research

EDUCATION

Research Fellow: Medical Genetics Branch, NHGRI, NIH, 2002–2003

Postdoctoral Visiting Fellow: Heritable Disorders Branch, NICHD, NIH, 1998–2002

Ph.D.: (Medical Sciences) Nijmegen University, Netherlands, 1998

Teacher's degree: (Science and Biology) Wageningen University, Netherlands, 1993

Internship: (Molecular Biology) Monash University, Melbourne, Australia, 1991–1992

M.S.: (Molecular Biology and Biochemistry) Wageningen University, Netherlands, 1992

B.S.: (Molecular Life Sciences) Wageningen University, Netherlands, 1990

RESEARCH INTERESTS

Cell biology of human metabolic disorders; the study of patients' cells with rare biochemical diseases to elucidate (unknown) intracellular pathways and processes; special interests include intracellular formation and trafficking of lysosome-related organelles, mitochondrial membrane transport, glycobiology, and sialic acid metabolism.

PIVOTAL EVENTS

As a graduate student, I had the opportunity to perform parts of my research in different laboratories, including at Monash University (Melbourne, Australia), the Max Planck Institute (Gottingen, Germany), University of Bari (Italy), and The Wadsworth Center (Albany, NY, USA). In each of these laboratories, I learned new aspects of approaches to scientific research, experimental design, laboratory etiquette, and interpersonal contacts. In each of these settings, I also had to adjust to living in a different country and speaking a foreign language. These experiences have helped me get a broad view on how things work in scientific research, in collaborations, and in adjusting to different laboratory situations and techniques. These experiences were challenging and adventurous and certainly influenced me to become the person and scientist that I am today.

MENTORING & WORK/LIFE BALANCE

I have had good mentors throughout my career. My mentors were strong role models for me, giving me opportunities to develop further as a scientist. I strive to be an equally good mentor by helping students feel responsible and enthusiastic about their work, integrating them into research projects, providing encouragement and praise, and giving them opportunities to present their work at scientific meetings.

I am driven by enthusiasm for challenges and adventure in my personal life as well. In addition to traveling throughout the world, I also compete internationally in athletic competitions, including speed-skating, rowing, running, cycling, and triathlons. I won the 1999 amateur world championships duathlon, and several U.S. duathlon national championships. The attempt to combine laboratory research, athletic competitions, travel, and social life is a challenge by itself. I believe that enthusiasm and drive for whatever you take on in life are vital factors to succeed.

Laura M. Koehly, Ph.D.

Investigator and Head, Social Network Methods Section, Social and Behavioral Research Branch, Division of Intramural Research

EDUCATION

Ph.D.: (Quantitative Psychology)
University of Illinois at
Urbana-Champaign, 1996

M.S.: (Statistics)
University of Illinois at
Urbana-Champaign, 1995

A.M.: (Quantitative Psychology)
University of Illinois at
Urbana-Champaign, 1994

B.S.: (Psychology, Statistics)
University of California, Davis, 1989

RESEARCH INTERESTS

Social network methods, family systems, hereditary risk dissemination, communal aspects of coping with hereditary risk, network-based interventions

PIVOTAL EVENTS

I attribute my success to the people along my career path who have gone above and beyond to help me grow professionally, and my determination in pursuing my research interests. Early in my career, one of my professors was instrumental in guiding me toward a discipline that excites me still! A chance meeting at a conference led to a postdoctoral experience that focused my interests on families as they communicate about and cope with hereditary disease. I was persistent in pursuing my research interests, which did not fit within the mainstream of my field. I trusted that the direction of my work would make an important contribution to the field and have important implications in translational work. Since arriving at NHGRI, the community of scientists, their clear investment in my success, and interest and support of my innovative approach to studying families has been a significant contributor to my accomplishments.

MENTORING & WORK/LIFE BALANCE

The mentoring that I received as a young researcher was pivotal in moving me toward my professional goals. One of the most important aspects of my current position is providing similar support and guidance toward the professional development of my postdoctoral fellows, graduate students, and trainees. Sometimes this comes at a cost, as I need to shift my focus away from the work at hand, but the growth and success of my fellows is essential.

Since I do not have children and am not married, the challenge for me is creating a balanced life for myself. Often, I find my research and the demands of my work-related responsibilities take up my evenings and weekends. I need to consciously force myself out of that pattern and create time that is focused on nonwork-related activities. A successful balance between work and play grounds me so that I am a better mentor.

Donna Krasnewich, M.D., Ph.D.

Deputy Clinical Director

EDUCATION

Residency: (Pediatrics) Children's
National Medical Center, 1989

Internship: (Pediatrics)
University of Minnesota, 1987

M.D.:
Wayne State University, 1986

Ph.D.: (Pharmacology)
Wayne State University, 1986

BS: (Cell Biology)
University of Michigan, 1977

RESEARCH INTERESTS

Congenital disorders of glycosylation, metabolic disorders in children

PIVOTAL EVENTS

During pediatric residency, my mentors explained that there is something learned from every clinical situation. Children showed me how to learn, their parents taught me how to listen, and astute clinicians honed my knowledge base and judgment. However, it was one newborn with significant visible differences, born into a family struggling to cope, who helped me recognize that there is more to medicine. Clinical research requires both the ability to analyze data and the recognition that each affected individual makes a contribution to medical knowledge. Treating each subject with respect creates a research environment conducive to a successful project.

MENTORING & WORK/LIFE BALANCE

A supportive personal network is the key to both mentoring and balancing family with professional responsibilities. While maintaining my career, I raised three children, one with significant disabilities, because I had a supportive husband, strong clinical colleagues, and a network of women to discuss work and life strategies. There is no question that we need to support the younger members of our community in their quest to be both happy at home and academically successful. We listen, we advise, we support, and we teach by example. When problems arise, no matter how big or small, we address them with honesty and concrete solutions. Mentoring is much like raising children; doing it successfully requires patience, a sense of humor, and flexibility. The rewards are boundless.

Teri A. Manolio, M.D., Ph.D.

Director, Office of Population Genomics and Senior Advisor to the Director, NHGRI, for Population Genomics, Office of the Director

EDUCATION

Ph.D.: (Human Genetics/Genetic Epidemiology) The Johns Hopkins University School of Hygiene and Public Health, 2001

M.Hlth.Sc.: (Epidemiology) The Johns Hopkins University School of Hygiene and Public Health, 1987

M.D.: University of Maryland at Baltimore, 1980

B.S.: (Biochemistry) University of Maryland at College Park, 1976

RESEARCH INTERESTS

Genome-wide association in complex diseases, modification of genetic associations by nongenetic factors, risk factors for subclinical cardiovascular disease, impact of self-defined race/ethnicity and ancestral origin on genetic associations

PIVOTAL EVENTS

Two pivotal events in my NIH career were both fortuitous and providential—becoming the project officer of the Cardiovascular Health Study (CHS) in 1987, and becoming involved in nascent population-based studies of genetic variation in 2003. I inherited the massive effort that became CHS 6 months after joining NHLBI, when the prior project officer unexpectedly stepped down. Though totally unprepared, I was incredibly fortunate to work with and learn from true giants in cardiovascular epidemiology who showed me, step by step, how to develop and lead a successful cohort study. Sixteen years later, experience gained in CHS and similar studies led to the opportunity to work with Francis Collins and colleagues in developing a large-scale prospective study of genes and environment. This eventually produced a well fleshed-out study design, a series of preparatory research projects, and ultimately led to my moving to NHGRI to apply genomic technologies to population studies.

MENTORING & WORK/LIFE BALANCE

I have been most fortunate in the mentors I've had and in the colleagues I've mentored, and found that one of the best ways to facilitate mentoring is to find ways to be useful to your mentor, to unload them of time-consuming tasks, so that they have time to devote to you. I've also been struck by the enormous satisfaction I receive from seeing someone I've mentored develop and grow, even when they've followed my advice.

Balancing family demands has generally been easier for me than for my colleagues, as I do not have children, so I've often had more flexibility in expanding my hours when something particularly exciting was going on. As my parents have aged, however, I've increasingly encountered the need for sudden absences from work and am gratified by the support I receive from my colleagues in my attempts to meet these new obligations.

Colleen M. McBride, Ph.D.

Senior Investigator and Head, Public Health Genomics Section and Chief, Social and Behavioral Research Branch, Division of Intramural Research

EDUCATION

Postdoctoral Training: (Health Services Research) Group Health Cooperative, 1992

Ph.D.: (Behavioral Epidemiology) University of Minnesota, Minneapolis, 1990

M.A.: (Sociology) University of Arizona, Tucson, 1982

B.A.: (Sociology) University of Wisconsin, Madison, 1980

RESEARCH INTERESTS

Developing effective population-based interventions for health behavior change, using genetic risk feedback to motivate behavior change, reducing disparities in health outcomes

PIVOTAL EVENTS

Being awarded my first NIH R01 grant as an independent investigator was a very powerful affirmation that I had support for my ideas from my peers. I worked very hard on the grant, taking over a year to carefully construct my argument and study design, picked a team of great scientists whom I also liked a lot, and gave the effort my full-force focus. The hard work paid off; I got the grant on the first try. It was life-altering in that it had been such a labor of love through which I had followed my own instincts and then it was all punctuated by such a terrific happy ending. This experience infused me with the mix of confidence and fire-in-the-gut motivation that I believe has been critical to my success.

MENTORING & WORK/LIFE BALANCE

I have had the great good fortune to have had several outstanding and tough mentors. That said, mentoring has been and continues to be by far the greatest challenge for me as a scientist. Finding the optimal balance between being critical while nurturing the independent intellectual spirit of a junior scientist is an elusive and continuing challenge. But when I do have a moment of mentoring chemistry between myself and a junior scientist, there is nothing I do that is as satisfying.

I am no expert at balancing personal and professional responsibilities. I try simply to recognize signs that my spirit is flagging and take time to regenerate and restore. Most of that comes from regularly getting away from the work, really away, off the cell phone, e-mail and blackberry, and turning full attention to the other important areas of life.

Yardena Samuels, Ph.D.

Tenure-Track Investigator and Head, Molecular Cancer Genetics Section, Cancer Genetics Branch, Division of Intramural Research

EDUCATION

Postdoctoral Fellowship: The Sidney Kimmel Comprehensive Cancer Center, The Johns Hopkins University School of Medicine, 2003–2006

Ph.D.: (Molecular Cancer Biology) Ludwig Institute for Cancer Research, Imperial College, London, 2002

M.Sc.: (Immunology and Cancer Research) Hebrew University of Jerusalem, Hadassah Medical School, 1997

B.Sc.: (Cancer and Genetics) Newnham College, Cambridge University, 1993

RESEARCH INTERESTS

Cancer genetics: Identification of genes that are mutated in melanoma and the elucidation of the cellular pathways that these alterations perturb; functional evaluation of mutant PI3Kα, which is one of the most highly mutated oncogenes in human cancer

PIVOTAL EVENTS

Ever since I could remember, I was drawn to science, from writing stories at an early age about biological systems to doing mini-chemistry experiments at home. However, I never showed a clear preference for any particular scientific discipline until the day we found out that a member of my family had cancer. From that day, I found myself sitting with my books, studying more biology. During my B.Sc. at Cambridge, I read about Bert Vogelstein's genetic model of colorectal tumorigenesis. Its ingenuity struck me and compelled into this field. Much later, during my postdoc, I was part of a group that discovered and characterized mutations in the PIK3CA gene. This event strengthened my conviction that my scientific path was to pursue cancer genetics as a means of understanding tumorigenesis and thereby combating it. These three events had a reinforcing power that I want to be part of a community of people that contribute to the understanding and treatment of cancer.

MENTORING & WORK/LIFE BALANCE

Balancing my family and my scientific career is not always easy. It requires delicate tweaking to be both the best mother and the best scientist I can be. Balancing the two successfully stems from good fortune and enormous support from my husband, colleagues, and mentors.

I was fortunate to do my postdoctoral training with mentors who had a compassionate attitude with respect to my first pregnancy. My pregnancy couldn't have come at a more exciting and challenging time in my scientific development. I was part of a rather demanding project, the support of my mentors and fellow postdocs were crucial for its successful completion. My second pregnancy came at an equally challenging time, while I was setting up a lab at NHGRI. Once again, with enormous help from supervisors, colleagues, and mentees, the lab operated smoothly during my maternity leave. Having such people around gives one great confidence and a feeling of being very fortunate.

Ellen Sidransky, M.D.

Senior Investigator and Head, Molecular Neurogenetics Section, Medical Genetics Branch, Division of Intramural Research

EDUCATION

NIH Interinstitute Genetics Fellowship, 1989

Residency: (Pediatrics) Northwestern University, 1984

M.D.: Tulane University School of Medicine, 1981

B.A.: (Biology) Brandeis University, 1977

RESEARCH INTERESTS

Human genetics, lysosmal storage disorders, Mendelian disorders, Gaucher disease, genetic modifiers

PIVOTAL EVENTS

Balancing different aspects of my research, both at the bench and the bedside, has been most important in my success as a scientist. I am continually amazed by how the patients whom I encounter in the clinic have driven my research directions. For example, the evaluation of a patient with Gaucher disease who had features of parkinsonism subsequently led to my discovery of a link between mutations in the Gaucher gene and Parkinson disease and may contribute to a better understanding of both disorders. Likewise, observations made in the laboratory have resulted in some of my most important clinical insights. The unexpectedly severe phenotype of a mouse model of Gaucher disease helped me to recognize a similar lethal phenotype in human newborns. The ability to translate findings in both the basic research and clinical arenas has greatly enriched my career, and has helped to keep it interesting and meaningful.

MENTORING & WORK/LIFE BALANCE

During my 19-year career at the NIH, I have raised four children. While at times this has been challenging, exhausting, and even frustrating, I believe that the experience has made me a better scientist, manager, clinician, and person. In many ways, the demands of family seemed to limit my scientific productivity, but, in the long run I believe that the skills, prioritization, and efficiency that I had to develop because of my busy life have ultimately benefited my career. Also caring for a sick parent or child provided me with insights into the frustrations and needs of my patients. The parenting experience has also made me a better mentor, for through the differences in each of my children, I have come to appreciate the different needs, talents, and learning styles of trainees. This has also provided me with a greater understanding of their struggles, accomplishments, and successes.

Yingzi Yang, Ph.D.

Senior Investigator and Head, Developmental Genetics Section, Genetic Disease Research Branch, Division of Intramural Research

EDUCATION

Postdoctoral Fellow: (Molecular Genetics) Harvard University, 1996–2000

Ph.D.: (Molecular Biology), Weill Medical College of Cornell University, 1996

B.S.: (Biophysics) Fudan University, China, 1988

RESEARCH INTERESTS

Genetics of mammalian embryonic development

PIVOTAL EVENTS

I was brought up in a family that loves science. I like science also because I was good at math and science when I was a kid. I was fortunate enough to get in one of the most prestigious Universities in China, where I received my first rigorous scientific training. My career in biomedical science was greatly influenced by Dr. Lee Niswander, who was my graduate school mentor, and Dr. Andy McMahon, who was my postdoctoral mentor. Both Lee and Andy are the world's most renowned

scientists in the research fields of molecular genetics and developmental biology. They let me understand that to have a successful scientific career, one has to have the true passion for science and be dedicated, persistent, fair, and unbiased.

MENTORING & WORK/LIFE BALANCE

I think mentoring and training the next generation of biomedical scientists is one of my most important responsibilities as a lab head. I hope that trainees in my lab will learn how to think independently, identify the fundamental questions in science, and come up with appropriate and novel approaches to find answers to the questions. I believe my daily interactions with them play a bigger role in influencing their thoughts and attitudes about science and career.

Science is a demanding career. As a woman with a family, I think I am lucky to have a very understanding husband who has been very supportive to my career. I was able to stay at work for long hours and travel several times a year if needed. To spend quality time with my family, I try hard not to bring work home and make the best use of my flexible schedule.

National Institute on Aging

Judith A. Salerno, M.D.

Deputy Director (Former)

EDUCATION

M.D.: Harvard Medical School, 1985

S.M.: (Health Policy and Management) Harvard School of Public Health, 1976

B.A.: (History/College Studies) Stonehill College, 1973

RESEARCH INTERESTS

Long-term care, career development programs, arts, and aging

PIVOTAL EVENTS

After a rewarding professional career as a health policy analyst, I decided that I was better suited to a career in medicine and science. Asking myself, "Why not follow your dreams?" I returned to school to take more undergraduate science courses and found myself, nearing age 30, competing for grades with 18- and 19-year olds. I recall one of my chemistry professors suggesting that I was "too old" to take up science and, worse yet, medicine, especially if I wished to have a family. Without question, his doubts about my career choices were uppermost in my mind while I worked toward an "A" in his course. He motivated me to achieve and to learn science, albeit through my refusal to accept his cynicism and disapproval.

MENTORING & WORK/LIFE BALANCE

As a single mother with three teenaged children, I frequently feel "off balance." I have always worked to support my family, even during my years of clinical training, but I can't imagine a life without my career. Over the years, I have become comfortable with the perspective that either professional responsibilities or family may be on the "front burner" at any given time—never both together—but there will always be something on the stove! I have been fortunate to have good friends who can leap into help me, good supervisors who understand my priorities, and great children who are very forgiving if I can't make it to every soccer and baseball game. My female role models were few and far between, but I remember (and thank) each and every one.

INSIGHTS

My "second career" has given me the opportunity to work in different professional settings and experience a variety of ways a physician–scientist can serve numerous communities.

For example, I have built a geriatric medicine program in an academic health center, developed a fellowship training program in geriatrics, been actively involved with a consortium of community health organizations, worked in a laboratory doing clinical neuroscience research, and been in the thick of health policy decisionmaking at the highest levels of government. Now, my work at NIA allows me to draw from all these past experiences to advance the mission of our Institute—to encourage and support biomedical research, the development of research resources, and research training, as well as improve public understanding of the health of our aging population.

I would strongly recommend that women be undaunted about letting their colleagues know when, on occasion, personal or family responsibilities need to take priority, while always remembering that the rewards of a family need not exclude a satisfying professional life and that both can sustain you through the peaks and valleys of life.

J Taylor Harden, Ph.D., R.N.

Acting Deputy Director;
Assistant to the Director for Special Populations

EDUCATION

Ph.D.: (Psycho-Gerontology/Psychiatric Mental Health Nursing) University of Texas at Austin, 1989

M.S.: (Psych-Mental Health Nursing) University of Maryland at Baltimore, 1977

B.S.N.: University of Maryland at Baltimore, 1972

RESEARCH INTERESTS

Dr. Harden has wide-ranging research and teaching interests in aging; her core research interests are prevention and health promotion for older, minority women, with emphasis on behavioral interventions as well as functional and psychosocial outcomes.

PIVOTAL EVENTS

As an African American female, product of public schools in Washington, DC, and the first in my family to attend college, I wanted to help others in a profession that also offered security and flexibility—a career in nursing seemed appropriate. After obtaining a baccalaureate degree in nursing, I became a military nurse, where my interest in physical and mental health and health promotion grew. But the focus gradually changed from acute illness in young adults to chronic health conditions in older adults and from clinical practice to clinical research, leading to a Ph.D. in nursing, with emphasis in research and psycho-gerontology. Being selected an NIH Extramural Associate made a critical difference in my tenure as a scientist in aging research. I was mentored by Dr. Miriam Kelty from the National Institute on Aging and Dr. Gertrude McFarland, then of the Division of Research Grants and now, Center for Scientific Review.

MENTORING & WORK/LIFE BALANCE

My career mentors in aging have modeled the critical dynamics of priority setting and balancing family with professional responsibilities. A helpful management illustration, taught early in my career and remembered often, involves a glass jar, rocks, stones, pebbles, sand, and water. First, I was asked to put the rocks in the jar and then asked the question, "is the jar full?" After adding each of the items in a succession of rounds, I was asked, "is the jar full?" Finally, I was asked to add water. The water saturated the sand, covered the pebbles, stones, and rocks, and spilled over the top of the jar. The lesson became clear—your family, friends, and mentors are the rocks, and room must be made for them as a first priority, work and professional responsibilities will seep in to fill all other available space. Learn what is important and make priorities.

INSIGHTS

In a professional life dedicated to higher education and aging research, the various administrative and leadership positions I have held have deepened my commitment to improve not only the quantity, but the quality of life of older adults. As the Assistant to the Director for Special Populations, NIA, my responsibilities include building collaborations and communications with extramural faculty scientists and professional organizations. I plan, develop, implement, and manage scientific meetings for women, minority, and disabled scientists, including an annual 7-day NIA Summer Institute on Aging Research. This involves a highly competitive application process, scientific review of abstracts, coordination of approximately 40 doctoral-level participants, and over 25 senior faculty from intramural and extramural research programs, scientific associations, academic institutions, and private foundations. As a result, over 800 new and emerging leaders and scholars in aging research, usually more women than men, have benefited from the informative curriculum and enduring network of the NIA Summer Institute.

NIA

Michele Kim Evans, M.D.

Deputy Scientific Director, Intramural Research Program

EDUCATION

Fellowship Training: (Medical Oncology) National Cancer Institute, 1986–1990

Postgraduate Training: (Internal Medicine) Emory University School of Medicine, 1981–1984

M.D.: University of Medicine and Dentistry of New Jersey: The Robert Wood Johnson Medical School, 1981

A.B.: (Biology) Barnard College, 1977

RESEARCH INTERESTS

Biochemistry of DNA repair, the role of DNA damage and repair in cancer, minority health and health disparities

PIVOTAL EVENTS

Two events changed my career goal from community-based clinical medicine to research. First, in medical school, Dean Jack Gardner said he saw me as a research fellow in 10 years, not practicing medicine. He felt I was not stretching myself in my career choices and clearly had a vision for me that I did not even have for myself. He felt I needed the push he was prepared to give. Even after I came to NIH, he made certain I stayed on track.

Second, my NIH mentors, Drs. Dan Longo, Samuel Broder and Bruce Chabner continued Dr. Gardner's efforts by continually challenging me to pursue being a true physician–scientist. By providing vital support and training at each bend in the career path, this triumvirate nurtured me at critical career junctures and enabled the basic science work, the clinical work, the community-based epidemiologic study of health disparities work I do.

MENTORING & WORK/LIFE BALANCE

Traditional mentors like my parents and educators have been critical in every career step. As a minority female, I have thrived in mentoring relationships with minority men and women as well as those with nonminorities. As a physician–scientist, many patients I have treated were excellent mentors, developing my patient care skills as I was torn between career opportunities in clinical practice and research.

There is no perfect balance between family and work, just a never-ending series of careful compromises in order to successfully fulfill the multiple roles women must play on a daily basis. Hour to hour, one role dominates over the other as one is asked to be mother, researcher, wife, daughter, cook, physician, statistician, and director of the school pageant all in one day. Once one accepts that there is no perfect balance, it is much easier to succeed in both the professional and personal spheres of life.

INSIGHTS

My most significant career milestone has been the design and implementation of HANDLS, the Healthy Aging in Neighborhoods of Diversity across the Life Span Study. This multidisciplinary, community-based, prospective longitudinal epidemiologic study examines how race and socioeconomic status influence the development of age-related health disparities among African Americans and whites in Baltimore. This unique study employs novel research tools—mobile medical research vehicles—to improve participation rates and retention among nontraditional research participants. HANDLS allows me to conduct research on health disparities, have a clinical outlet, and conduct basic and translational research—a true convergence of all the factors that led me to become a physician–scientist.

As a minority woman in science, I have been in the 'double-bind,' described in 1975 by Shirley Malcolm. Even in 2007, additional challenges for minority women in science further complicate career progression and frequently compound their roles and responsibilities. I enjoy meeting the challenges and paying the price presented by my career path as no other provides such a robust chance to make a difference and do important work.

Marcelle Morrison-Bogorad, Ph.D.

Director, Division of Neuroscience

EDUCATION

Postdoctoral Fellowship: (Biological Chemistry) University of Cincinnati Medical Center, 1971–1975

Ph.D.: (Biochemistry), Beatson Institute for Cancer Research, Glasgow University, 1971

Hons. B.Sc.: (Biochemistry), University of Aberdeen, Aberdeen, Scotland, 1967

RESEARCH INTERESTS

Basic and applied research on causes and treatment of normal age-related behavioral change and Alzheimer's disease (AD)

PIVOTAL EVENTS

Being one of the few researchers in neuroscience who had molecular biology experience and working with a collaborator who complemented my molecular experience with knowledge of the brain were two important aspects of my career.

MENTORING & WORK/LIFE BALANCE

I mentored both women and men in my laboratory and was a successful role model for women and for medical students who wanted a taste of research. Mentoring was really a source of joy because I could see my charges develop professionally. My husband and I have no children, so I have the utmost respect for those who combine child rearing with their professional responsibilities.

INSIGHTS

I have never felt that being a woman hindered my career development although I did have to press for equal pay early on. While an undergraduate, I was the first female to be voted head of my mixed hall of residence. Take advantage of these opportunities for service for they give you valuable experience and you never know where they may lead. In my case, being asked to be on the National Alzheimer's Association Medical and Scientific Advisory Board later in my career exposed me to the wider world of AD research and to caregivers and volunteers and laid the foundation for my eventual move to the NIH.

Chhanda Dutta, Ph.D.

Chief, Clinical Gerontology Branch, Division of Geriatrics and Clinical Gerontology

EDUCATION

Ph.D.: (Pharmacology) Uniformed Services University of the Health Sciences, 1986

B.S.: (Biology) American University, 1982

RESEARCH INTERESTS

Clinical research on age-related loss of muscle (sarcopenia), age-related physiological changes across the lifespan, influence of physical activity/exercise on aging, and exercise programs for older adults

PIVOTAL EVENTS

Being of Indian descent, although born and raised in the United States, forced me to navigate through, and often struggle with, the influences and expectations of two very different cultures for many years of my life. My struggles eventually taught me to find commonalities in things seemingly disparate, to integrate various influences, and to be self-directed. I think these same skills were pivotal to the development of my scientific career. For instance, although my doctoral thesis focused on reproductive endocrinology, my Ph.D. is in pharmacology, and my postdoctoral research was on vitamin D and calcium metabolism. I was also a pharmacologist in the Food and Drug Administration, prior to arriving at the NIA in 1993. Ultimately, I was able to draw from and continue to build upon my diverse scientific background and research experiences to successfully work in and promote the multidisciplinary field of aging research.

MENTORING & WORK/LIFE BALANCE

Balancing personal and professional responsibilities is an admirable goal, but in reality, it is difficult to achieve. At the time I was going through graduate school and postdoctoral training, there were not any mentoring programs available. Like so many of my contemporary colleagues, I have learned to shift my energies between personal and professional responsibilities, as needed. In practice, we make trade-offs between personal and professional responsibilities, rather than achieve any balance.

NIA

Josephine M. Egan, M.D.

Chief, Diabetes Section and Acting Chief, Laboratory of Clinical Investigation, Intramural Research Program

EDUCATION

Fellowship: (Endocrinology)
University of Virginia Health Sciences Center, 1987–1990

Fellowship: (Clinical Pharmacology)
Baylor College of Medicine, Houston, TX, 1984–1986

M.B.B.Ch.: National University of Ireland, 1979

B.Sc.: (Pharmacology) National University of Ireland, 1976

RESEARCH INTERESTS

I am fascinated by the beta cell in islets of Langerhans within the pancreas. They are like little machines that sense any perturbations in blood glucose, and they can exquisitely modulate the amount of insulin secreted, as needed, at any moment in time. In type 2 diabetes, the sensing machinery is gone awry, and consequently, blood glucose is higher than it should be.

PIVOTAL EVENTS

My Irish training gave me a good, solid medical background. It opened my mind to unsolved medical dilemmas. If I had not come to the United States from Ireland in 1984, I would not be carrying out basic research. I completed a Clinical Pharmacology Fellowship in Baylor College of Medicine, Houston, when I first came to the United States. Baylor was a very rich research environment, with lots of potential collaborations and many excellent researchers, and I was able immerse myself in research for a full 2 years. This gave me the confidence to think I might be successful in biological research. From the moment I learnt how to isolate islets of Langerhans and actually see them in a dish, I was hooked on islet research.

MENTORING & WORK/LIFE BALANCE

During my fellowship at the University of Virginia, I began to study insulin secretion under the supportive direction of Dr. Michael Thorner. Under NIA Scientific Director George Martin, I explored what happens to insulin secretion with age to learn what might prevent the inexorable declines in insulin secretion with aging and disease. It was always difficult to balance family life with work. I often brought my first baby to the laboratory on weekends and evenings. I would work, feeling happy that he was with me, sleeping in his chair. With my second child, I worked at the bench throughout the working day, saving any writing for late night. During the week, my life was devoted to work, family, and sleep. I never owned a television, keeping up with current events through National Public Radio (NPR). I always carried a few manuscripts to read if I was picking up the kids and they were running late.

Rebecca A. Fuldner, Ph.D.

Chief, Aging Physiology Branch, Division of Aging Biology

EDUCATION

Postdoctoral Fellowship: Laboratory of Tumor Immunology and Biology, NCI, NIH, 1987–1990

Ph.D.: (Cell and Developmental Biology)
University of Wisconsin, Madison, 1986

B.S.: (Biochemistry) University of California, Berkeley, 1978

RESEARCH INTERESTS

How aging affects immunity; alterations in tissue function with aging

PIVOTAL EVENTS

While at the University of California at Berkeley, my first exposure to laboratory research was a work–study job during my sophomore year. The encouragement I received from my mentor and others in the laboratory as well as my sense of accomplishment in completing a project made my decision to become a research scientist quite simple, and I never looked back. The early 80s were a stimulating time in science as there were many new discoveries in the field of molecular biology that were full of promise. Later at The Institute for Genomic Research, I was fortunate to be one of the first scientists to view the entire set of genes encoded by the human genome. Not only was this experience exciting, but I also was involved in a gene race to find the gene(s) for early-onset Alzheimer's disease. Working in such a team setting was quite useful in helping to develop skills that are necessary for managing large multidisciplinary projects.

MENTORING & WORK/LIFE BALANCE

The most important career choice you will make is choosing your mentors. I encourage junior scientists to consult with previous students and postdocs about their experiences in the laboratory under consideration. This is time-consuming, but well worth the effort as the mentors you choose early in your career are critical. One of my former mentors once told me, "You can't choose your parents, but you can choose your career advisor." This advice also is true for those considering combining a family with a research career. Raising a family and being a successful scientist are both demanding endeavors. Find a partner willing to be equally responsible for home and family life. Most successful women scientists that I know are extremely efficient, having developed organizational skills early on that helped them later accommodate the increasing demands on their time. I would encourage young women scientists to identify and adopt some of these techniques early in their careers so that they become second nature.

Nina Silverberg, Ph.D.

Assistant Director, Alzheimer's Disease Centers Program, Division of Neuroscience

EDUCATION

Ph.D.: (Cognitive Psychology)
University of Arizona, 1998

B.A.: (Biopsychology)
Brandeis University, 1989

RESEARCH INTERESTS

Measuring memory and thinking ability in older people, Native Americans, and other underrepresented populations; educating the public as well as physicians about the latest research; and encouraging participation in research

PIVOTAL EVENTS

Unlike some people who know their career goals from age 2, when I finished college, I still had no idea what I wanted to "be when I grew up." So, drawing on a connection from a previous job as a research assistant at a rehabilitation hospital in Philadelphia, I found a similar position at Massachusetts General Hospital. Working with people with aphasia, I developed a strong interest in how language is represented in the brain, particularly in how we produce language. I was told the best in the field was someone at the University of Arizona. Though it seemed literally and figuratively like Mars to me, I fell in love with Tucson and had a superb graduate school experience. I was later drawn back to Arizona and was fortunate to obtain a position at Sun Health Research Institute, where my current research interests blossomed and culminated in my present job.

MENTORING & WORK/LIFE BALANCE

My best mentor is my mom, who always encouraged me to feel proud of my accomplishments and to learn from my mistakes. Moreover, she is a terrific role model. Having grown up in an immigrant household, she worked her way through college. She not only was the spokesperson for Metro, but also launched her own successful media relations consulting business.

I was pregnant with my second child when I applied for my current position. My son was 4 weeks old when we moved from Arizona to Bethesda and 2 weeks later, I started working. My first week on the job, since I was nursing, I dragged my infant and my mother back across the country to a meeting in California. My son, of course, decided he was hungry just as I was to be introduced to the scientists I would be working with! How's that for balancing family with professional responsibilities?

Catherine A. Wolkow, Ph.D.

Head, Invertebrate Molecular Genetics Unit, Laboratory of Neurosciences, Intramural Research Program

EDUCATION

Ph.D.: (Molecular Biology & Genetics)
The Johns Hopkins University School of Medicine, 1997

B.A.: (Chemistry) Pomona College, 1990

RESEARCH INTERESTS

Genetic determinants of healthy aging and longevity

PIVOTAL EVENTS

The major factor in my career success has been the collaborations I have conducted with other colleagues. Science is a collaborative enterprise, regardless of the fact that we sometimes spend long hours in the lab working alone on our own projects. Our work is only meaningful when it fits into a larger picture that includes the findings of our colleagues. In both my graduate and postdoc work, I was able to incorporate my studies with those of my lab-mates, leading to a more significant contribution at the end. As a lead investigator, I work very hard to find common connections between the projects ongoing in my lab and to establish a sense of collaboration between the various members of the lab.

MENTORING & WORK/LIFE BALANCE

Mentoring and collaboration are essential for building a successful scientific career. While some may be comfortable approaching a powerful scientist for advice, this has been an intimidating prospect for me. To overcome this, I took advantage of any opportunity to interact with senior scientists. This helped me get over my shyness and establish a rapport for mentoring discussions.

The delicate balance between family and professional responsibilities is ever-changing. It helps to appreciate that everyone struggles with this issue and nothing ever feels quite enough. When I started my family, I decided that I could only do my best and that worrying wasn't going to solve the problem. On most days, I feel fairly comfortable with the balance that my husband and I have achieved. On the harder days, I try to keep in mind that this balance may get easier as the kids grow up.

National Institute on Alcohol Abuse and Alcoholism

Hee-Yong Kim, Ph.D.

Chief, Laboratory of Molecular Signaling, Division of Intramural Clinical Biological Research

EDUCATION

Ph.D.: (Analytical Chemistry) University of Houston, 1984

M.S.: (Natural Product Chemistry) Seoul National University, Seoul, Korea, 1980

B.S.: (Pharmacy) Seoul National University, Seoul, Korea, 1978

RESEARCH INTERESTS

Membrane biochemistry and modification, mass spectrometric characterization of signaling proteins and membrane lipids, development of mass spectrometric methodology for membrane phospholipids remodeling and membrane–protein/ protein–protein interaction

PIVOTAL EVENTS

My decision to study mass spectrometry for my Ph.D. affected my career tremendously. Dr. Marvin Vestal and his group were about to make a breakthrough that could revolutionize the way biological studies were performed. I wanted to learn more about this exciting field, but I did not have the background to pursue the types of projects carried out in his lab. Understandably, Dr. Vestal was not willing to take me as his student. After a week of contemplation, I decided not to give up. I took extra courses and researched the literature on my own, got accepted by Dr. Vestal, worked hard, produced, and became one of his favorite students, eventually earning the nickname 'Ace.' Being trained as a mass spectrometrist greatly expanded the horizon of my research capability in pursuing biological problems. More importantly, once I experienced the success of learning a seemingly difficult new field, I was ready to face new challenges in all aspects of my scientific career without being intimidated.

MENTORING & WORK/LIFE BALANCE

As a mother of two boys, it was sometimes difficult to juggle the time. However, I tried to do my best to be productive whether at work or at home. I always felt grateful for the opportunity to work as a woman scientist despite having to leave my precious children in daycare. Most of all, my husband, who is also a scientist, understood the long hours of a scientist's daily life and was a great help. We always placed family life first, while pursuing our careers. At times, some sacrifices were inevitably made both at work and home. However, I found that there is always a

way to make it work in the long run, as long as one does not give up. My advice to women scientists is that under any circumstances, be confident in your ability, grateful, responsible, and never give up anything that is dear to your heart.

INSIGHTS

I came to the United States after receiving my master's degree in Korea. Naturally, I had difficulties in following lectures, expressing my thoughts, and communicating with others even on scientific matters. Furthermore, I cannot forget to mention my struggle to understand the culture of American life, at least for the first 5 years. Despite the hardship, I never gave up my dream of being an excellent scientist and a contributor to biomedical research.

As a foreigner and a woman, advancing each step of my career seemed to be a hurdle. I felt honored when elected to the Board of Directors of the American Society for Mass Spectrometry in 1995. This experience provided me with a unique opportunity to learn not only the broad prospect of cutting-edge mass spectrometric research, but also the collaborative spirit and organizational skills of the scientific community. Serving as the Nomination Committee Chair of the same society gave me an opportunity to examine successful examples of scientific activities. I served on the Editorial Board for Analytical Biochemistry, and organized/lectured at many national and international scientific meetings. I currently serve on the Board for the International Society for Studies on Fatty acids and Lipids. While these activities at times detracted from my scientific productivity, they contributed to my scientific track record. In 2006, I was promoted to Laboratory Chief. It was tremendous progress for a shy woman who had limited capability of expressing herself 27 years ago. Thinking back, it was the patience and tenacity that helped me to get here. I always tried my best in whatever I undertook and waited patiently for the results of my efforts. In doing so, I found it necessary to be assertive but polite. I struggled with this idea for a while and I am indebted to my friends and colleagues who helped me through the difficult times. I believe that if one is earnestly doing his/her best, there will be an outcome commensurate with the efforts, even if it may not be immediate. In addition, I would like to encourage women scientists to actively cultivate a cooperative and nurturing environment and to network. Above all, each of us must strive to become a good scientist with high work ethics, as the success of our profession is undoubtedly impinged upon scientific merits.

Patricia A. Powell, Ph.D.

Chief, Science Policy Branch,
Office of Science Policy and Communications

EDUCATION

Ph.D.: (Cellular and Molecular Biology) Washington University, 1988

B.A.: (Classics) Franklin and Marshall College, 1980

RESEARCH INTERESTS

Molecular and cellular genetics and developmental biology

PIVOTAL EVENTS

After graduating from college I worked as a lab technician for a year prior to entering graduate school. I was very fortunate to work with a Principal Investigator who was at the top of her field. She had an uncanny ability to ask the central question, whether in a seminar or informal discussion. The value of asking the right question stuck with me and guided my research career. In addition, for the first time, I experienced the fun of doing cutting-edge research. Even this early in my career I realized the importance of conveying both the excitement and the value of what we were doing in the laboratory. This started out as drawing genes and plasmids on paper napkins at the family dinner table, but eventually led to my spending a year at the National Science Foundation working on how to translate cutting-edge science for the lay public.

MENTORING & WORK/LIFE BALANCE

Mentoring is critical in science and I have both benefited from excellent mentoring as well as tried to provide it to others. One of the most valuable comments I ever received came from a mentor who was leaving the place where we both worked. He said, "When I talk with you in the future, I'm always going to start by asking about your family, not your job." When I start to lose sight of my priorities, that statement comes back to me. I do think being able to share a love of science, an excitement for exploration, and the value of a good question is a gift that scientists can give their children.

INSIGHTS

My career has taken many twists and turns that I certainly did not foresee from the outset. My research experience ranges from generating genetically modified virus-resistant plants, to pattern formation and neural development in the fruitfly. In my thesis lab, there was great excitement around being one of the first to express foreign genes in plants, and the first to engineer resistance to viruses using this technology. In later years,

watching the debate on genetically modified organisms play out and seeing the influence of the spin by both extremes on public opinion, I became increasingly interested in the communication of science and science policy. In order to pursue this interest, I spent 1 year as an American Association for the Advancement of Science, Science and Technology Policy Fellow at the National Science Foundation focusing on how to provide information about cutting-edge science to the public through science museums, television and radio programs, and IMAX films. Our primary goal was in educating the public about major areas of current research occurring worldwide that warranted translation—especially research that might impact individual decisionmaking or policy formulation. Following my year at NSF, I moved to NIH as an AAAS policy fellow and remained there. Working at NIAAA, I focused much of my attention on the issue of underage drinking. One of the highlights of my policy work at NIH was serving as liaison to the Surgeon General's Office as we cowrote and edited the Surgeon General's Call to Action to Prevent and Reduce Underage Drinking.

Tina Vanderveen, Ph.D.

Director, Office of Extramural Activities (Former)

EDUCATION

Ph.D.: (Nutrition)
Ohio State University, 1976

M.S.: (Public Administration) George Washington University, 1965

B.S.: (Biological Sciences) Montana State University, 1953

RESEARCH INTERESTS

The scientific pursuit of alcohol consumption as it relates to better understanding of direct and indirect health effects attributable to human disease, comorbid disorders, mortality, and public health; relationships between biological factors and behaviors occurring in the context of environmental settings need to be untangled to better explain biological variability in response to the consumption of alcohol throughout the human lifespan

PIVOTAL EVENTS

The opportunities that enabled me to pursue a career in science include advice from my parents to pursue college after high school. It included hard work to earn sufficient money to afford this! Secondly, I was encouraged to seek opportunities to seek financial assistance and to make those commitments necessary to achieve my goals. Finally, I was employed in the private sector; money to conduct research was available and no one in the company was qualified to undertake development of a sound research program!

It was at the insistence of my husband that I explored graduate possibilities for someone with considerable work experience, a few graduate hours toward a doctoral degree, and a strong belief that biology and behavior were somehow related in a way that could help health and disease! This took 3 years in a graduate program in residence nearly 2,000 miles from my home! I would add that leaving two young children, even in wonderful and competent care, was not easy. However, our entire family shared my goal and upon its accomplishment we found ourselves moving to Washington and me hunting for employment. My NIH career has evolved as a Health Science Administrator.

MENTORING & WORK/LIFE BALANCE

I have alluded to this balance in the above paragraph. I would add and emphasize that my marriage and family responsibility has always been a partner relationship with my husband. We had no other family support in child care, our lifestyle was modest, and our combined focused interest is science and academics. We are both scientists; our children have pursued careers in art and science.

The mentoring I have received was largely what I have sought in relation to goals that I felt were realistic. Before coming to NIH, I was not aware of the myriad opportunities for career progression through extramural programs. After my initial employment as a special assistant, I quickly realized that combining graduate school experience with previous experience as an administrator enabled me to assume the duties and responsibilities that comprise the Health Science Administration field. I had numerous mentors and very much cherished the opportunity to interact with scientists in the extramural community. In the most recent years, I acquired additional responsibilities and now have the privilege of providing mentoring for scientists who have recently joined my staff as Scientific Review Administrators.

INSIGHTS

Being a woman in science and/or a woman in the arts is still a challenge. Perhaps this is not so apparent in the earliest stages because gaining entry is easier in the sciences as well as other professions. In early adulthood, a more complex array of choices and value considerations provide barriers for many women. Several issues are at play here. It is my observation that early marriage provides some risk as intellectual development and fulfillment can be difficult concepts to discuss with partners. The necessities of economics and support of young families further complicates decisions. A huge factor is geographic mobility; couples and families do not want to be separated and sometimes this is necessary on a temporary basis. To women, I

would really say, be your own person even as you accommodate other demands and expectations. A partnership, which was my good fortune to find, accounts for my happiness and success.

Beata Buzas, Ph.D.

Scientific Review Officer, Extramural Project Review Branch, Office of Extramural Activities

EDUCATION

Postdoctoral Fellowship: Uniformed Services University, Maryland, 1992–1995

Ph.D.: (Neuroscience) Jozsef Attila University, Hungary, 1991

M.S.: (Biology and Chemistry) Eotvos Lorand University, Hungary, 1988

RESEARCH INTERESTS

Neuroscience, signal transduction, genetics, addiction

PIVOTAL EVENTS

I think my most important attribute as a scientist is my endless sense of wonderment of and curiosity about the natural world. I love learning new things, whether it is intricate details of how the brain works or how migrating birds find their way, and even about subjects that I understand only as a layman, such as astronomy. In school, I loved every subject and being a scientist is like never leaving school; you are a student forever. Being imaginative and organized is also important, so is approaching hypotheses in a scientifically strict and unbiased manner. Scientific integrity is the most essential quality every scientist must possess.

MENTORING & WORK/LIFE BALANCE

I had three children in less than 4 years as a junior research faculty, and it was difficult to find the balance between professional and family life. I came from a country where there is much more support for working mothers. It was a heart break to leave my few-weeks-old babies in the care of someone else, but when I saw them thriving, it allayed my concerns. For many years, I had no time at all for myself; I was either at work or with my children. We also made some compromises: we bought a small house close to work instead of a larger one farther away, so I did not have to spend valuable time commuting. Often people asked me, "How can you do all this?" and my answer always was, "You just do what you need to do," which is the motto of many working mothers.

Mary-Anne Enoch, M.D.

Staff Scientist, Section of Human Neurogenetics, Laboratory of Neurogenetics, Division of Intramural Clinical and Biological Research

EDUCATION

M.B.B.S.: University College Hospital Medical School, London, 1981

B.A.: (Genetics) King's College, Cambridge University, 1975

RESEARCH INTERESTS

Genetic vulnerability and gene x environment interactions underlying alcoholism and comorbid disorders, particularly anxiety disorders; intermediate phenotypes (EEG power, event-related potentials [ERP], dimensional anxiety) for alcoholism and anxiety disorders

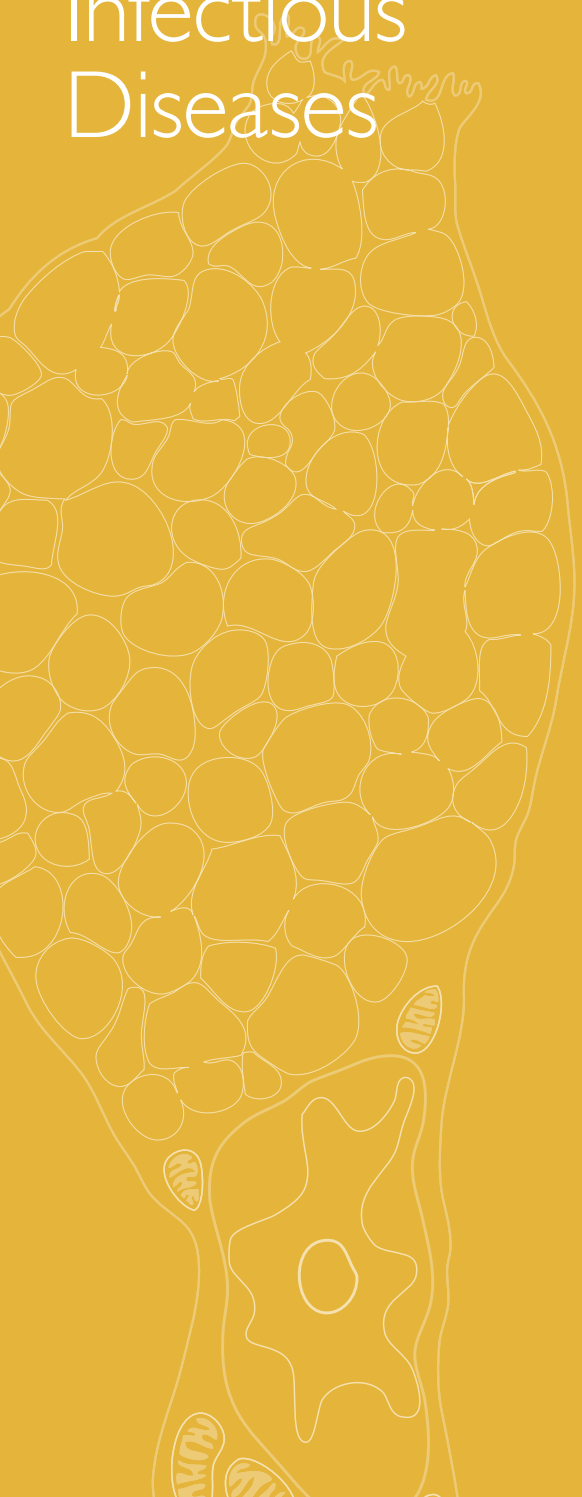
PIVOTAL EVENTS

Science has been my major interest since early childhood. I entered college wanting to be a physicist and exited it as a geneticist. I was then torn: should I go into research or become a physician? The latter won out and for several years I worked as a successful family practitioner with an interest in alcoholism, in London, United Kingdom. However I missed the intellectual stimulation of science so when my husband was offered a job in Washington, DC, I jumped at the opportunity to join NIAAA. My medical background gives me a broad perspective to my research in alcoholism and comorbid disorders and helps me in my work as a member of the NIH Neuroscience institutional review board (IRB). My most memorable times at NIAAA have been working together with members of Native American tribes in Oklahoma, collecting genotype—phenotype datasets to help understand the devastating consequences of alcoholism at an individual and community level. Pivotal reality-check moments in my scientific career came with the realization that if I was to get on, particularly as a woman scientist, I would have to be assertive and ask for the promotion, volunteer for the committee, organize the symposium, break into the networking system, and continually speak up.

MENTORING & WORK/LIFE BALANCE

My working hours as a scientist are flexible so that I have been able to balance professional responsibilities with raising my three children, for example by writing papers and reviewing manuscripts at home. I have learnt that in order to be a well-rounded scientist, it is important to nurture one's outside life and not to get totally caught up in the job, interesting as it may be.

National Institute of Allergy and Infectious Diseases



Carole A. Heilman, Ph.D.

Director, Division of Microbiology and Infectious Diseases

EDUCATION

Ph.D.: (Microbiology)
Rutgers University, 1979

M.S.: (Microbiology)
Rutgers University, 1976

B.A.: (Biology)
Boston University, 1972

RESEARCH INTERESTS

Infectious diseases with an emphasis on translational research and emerging/re-emerging threats

PIVOTAL EVENTS

I was fortunate to have mentors who demonstrated great personal and professional integrity. The concepts of scientific excellence and rigor were part of my training in bench research. My first few papers were published with reviewers' comments such as "absolutely nothing negative to say," and "critically important findings." This reinforced the value of quality and scrupulousness in research. These continue to be among my fundamental principles.

I also learned from my mentors the importance of looking at the entire picture when answering a scientific question. Although I'm a molecular biologist by training, I find that taking a multidisciplinary, broad-based approach almost always leads to more creative thinking and effective solutions. This has served me well in my current position.

MENTORING & WORK/LIFE BALANCE

A large part of my ability to balance family and responsibility comes from the fact that this was the accepted model in my family. My mother worked at a time when that was unusual for women. Loving your job is an important part of balancing. The time you spend away from your family has to be worth it. That time can be valuable to your family as well. Routine and organization help tremendously, as does a network of supportive colleagues, many of whom are facing similar challenges.

Mentoring is a responsibility and privilege for everyone in science and comes in many forms. Talking with a young scientist who is trying to sort out options, becoming a role model at work, explaining to elementary school children the wonders of germs, or conducting a homemade chromatography experiment can make a lasting impression beyond what you ever imagined.

INSIGHTS

I could never have wished for a better time to have started my career. Molecular biology was a new concept and I was helping to define it, starting to develop unique tools that are now commonplace and well established in today's laboratories. Cloning and developing the first "transcriptional map" of the human papillomavirus, applying molecular biology techniques to eukaryotic models of disease—these may seem ordinary now but they were revolutionary at that time.

I find it interesting that even in this day and age, a separate distinction is made for Women in Science. Perhaps one of the best gifts I have received is the belief that being a woman and a scientist was not unusual. Although my path has changed directions from the bench to the office, the scientist in me has never been stronger.

Hortencia M. Hornbeak, Ph.D.

Associate Director for Scientific Review and Policy, Scientific Review Program, Division of Extramural Activities

EDUCATION

Postdoctoral Fellowship: (Pox Virus) NIAID, 1972–1974

Ph.D.: (Medical Microbiology) Georgetown University School of Medicine and Dentistry, 1972

B.A.: (Biology & Chemistry) Skidmore College, 1968

RESEARCH INTERESTS

Prevention, diagnosis, immunology and treatment of infectious diseases at the national and international levels

PIVOTAL EVENTS

My scientific career began with a solid scientific foundation. I received a B.A. in biology and chemistry from Skidmore College, followed by graduate training, a Ph.D. degree in medical microbiology from Georgetown University Medical School, and a postdoctoral fellowship at the NIAID. As an Assistant Professor at a newly established medical school, South Alabama, I conducted research, taught medical and allied health students, and had numerous administrative and management responsibilities. As a result, I became keenly aware of my leadership and management skills and my ability to independently assume major responsibilities. These capabilities grew and were further developed through my career at the NIH, the world's preeminent research institution. This organization has exposed me to outstanding scientists and facilities, and increased my appreciation of the benefits of NIH's research to global health.

MENTORING & WORK/LIFE BALANCE

Formal and informal mentors have significantly affected my scientific development and career decisions. These mentors strengthened my interest in learning from all available resources, developing my strengths, and making sound career decisions that fit my family's needs. Decisions have been made within a broad framework of knowledge, which has led to optimal choices. If decisions have unexpected consequences, I identify reasons, capitalize on positive aspects, and use newly gained perspectives in future decisions.

Throughout my career, decisions were made to minimize stress on my family and to maximize the effects of my scientific, leadership and administrative career goals. To balance family and professional responsibility, I address the most demanding tasks when I am most productive and intercalate my family and work responsibilities. Through family support, resourcefulness, flexibility, and planning, my promotions to positions of increasing responsibility were accommodated without undue stress.

INSIGHTS

I have been a critical player in the development of major Institute programs in the areas of basic and clinical research in HIV/AIDS, immunology, transplantation, biodefense and emerging/re-emerging infectious diseases. This work required knowledge of science and national/international policy and procedures in an environment of constant change.

The vision and leadership skills I developed during my career are recognized within and outside the NIH. I have been on the faculty of Brookings Institute training programs for senior executive management, interacted with national and international scientists as part of NIAID, NIH, and HHS research programs and grantsmanship workshops, and represented HHS on U.S. State Department and Global Fund activities.

Throughout my scientific career, the latitude to make decisions and take risks in safe environments has contributed to my personal and professional growth, and has resulted in the development of skills, perspectives, and opportunities that otherwise would not have been available. In addition, my ability to network and gain knowledge of organization's culture/politics and acquisition of resources (e.g., staff, training, equipment, etc.) has been critical for success.

NIAID

Margaret (Peggy) I. Johnston, Ph.D.

Assistant Director for Vaccine Research;
Director, Vaccine Research Program,
Division of Acquired Immunodeficiency Syndrome

EDUCATION

Postdoctoral Associate: Rega Institute for Medical Research, Katholieke Universiteit Leuven, Leuven, Belgium, 1977–1978

Ph.D.: (Biochemistry) Tufts University, 1977

B.S.: (Chemistry) Carnegie-Mellon University, 1972

RESEARCH INTERESTS

HIV vaccine research, discovery

PIVOTAL EVENTS

My father instilled in me an insatiable curiosity about the world, and my mother demonstrated how helping others can be enormously fulfilling. Mix these characteristics with a strong desire to be part of a team and add good mentorship and the result is a rewarding career in trying to solve one of the world's greatest biomedical challenges—stopping the spread of HIV (www.bethegeneration.org).

My mentors, including David Stollar, my Ph.D. thesis advisor at Tufts University and J.J. McGowan, my first supervisor at NIAID, were clearly positive forces. I have also been fortunate to have contributed to several successes in the AIDS field to keep me going.

MENTORING & WORK/LIFE BALANCE

My partner and I are designated-guardian/godparents for five children, which means I have somewhat different challenges than those faced by my colleagues who are parents. Without the demands of raising children, it is perhaps too easy to work longer and harder. My challenge has been in creating and maintaining this extended family, allowing time for a rewarding life outside work and keeping up with those children, some of whom live quite far from DC.

I was taught early on that employment is a two-way street. The employee needs to give to the organization, and the organization needs to give back something of value to the employee. Clear communication from both sides and a willingness to give-and-take over time is necessary.

INSIGHTS

As Director of the vaccine research program in the Division of AIDS, I have responsibility for NIAID's extramural research programs focused on HIV/AIDS vaccines, including initiatives in fundamental vaccine-related research; vaccine design and discovery; preclinical evaluation and development; and clinical trials, including the HIV Vaccine Trials Network. As Assistant Director for HIV Vaccines at NIAID, I serve as a liaison between the extramural and intramural HIV/AIDS vaccine research communities, and with the nonprofit and private sectors to help establish productive collaborations and to ensure an integrated and coordinated vaccine research and development program. I chair several inter- and intra-agency groups and I serve on several international advisory and coordinating bodies in the field of HIV vaccine research and development.

I have worked in the field of AIDS since 1987. Prior to returning to NIAID in the fall of 1998, I was the founding Scientific Director of the International AIDS Vaccine Initiative (IAVI). Before HIV/AIDS, I had an academic research/teaching career that included employment at the Rega Institute in Belgium, the NIH, and the Uniformed Services University of the Health Sciences (USUHS).

What are the keys to success?

1. Understand what the job needs from you so you can excel in giving to the job. Then you are in a good position for #2 below.
2. Figure out what will make you happy and then go for it. Ask for it. Your boss is not a mind reader. And hopefully he/she will be willing to negotiate.
3. Learn to negotiate. Understand what is of value to yourself and the person with whom you are negotiating—and be willing to walk away.
4. Value what you bring to the table. If the organization does not recognize your value, you are not in the right organization and you should leave.
5. Embrace rather than fear change. Change is inevitable and brings the possibility of more, not less. Letting go leaves you a free hand when the brass ring comes around. And it will.
6. Grab for your brass ring, whatever it may be. Everyone has self-doubts at times, even though they may not show it. So be brave and go for it.
7. If you should fail (and everyone does) or when you do need help, lean on others. They will feel useful and you will get the support you need.
8. Learn something from every failure. Those moments are much greater teachers than your successes.
9. When you need to choose, and you will, put family first. As former Senator Paul Tsongas wrote, no one ever lay on their death bed wishing they'd worked harder.
10. You are the boss of yourself and don't let anyone tell you otherwise. So please take from this list what works for you and throw the rest away!

Susan Plaeger, Ph.D.

Director, Basic Sciences Program,
Division of Acquired Immunodeficiency Syndrome

EDUCATION

Postdoctoral Fellowship: (Human Immunobiology) University of California at Los Angeles, School of Medicine, 1983–1985

Ph.D.: (Microbiology and Immunology) Louisiana State University Medical Center, 1982

M.S.: (Microbiology and Immunology) Louisiana State University Medical Center, 1976

B.S.: (Medical Technology—Biology and Chemistry) Loyola University, New Orleans, 1971

RESEARCH INTERESTS

Basic research on the biology and pathogenesis of HIV and virus/host interactions of HIV-1

PIVOTAL EVENTS

The most positive influences were a mother and father who always told me that I could be anything I wanted to be. Neither of them had the opportunity to finish college, so they wanted that for me more than anything. My father also always treated me the same as my three brothers, never ever implying that I could not do anything that they could.

A negative experience that had an influence was a professor in graduate school who told me that my NIH fellowship was wasted because I would only go home and have babies and not use my Ph.D., which gave me the impetus to prove him wrong in the biggest way I could.

MENTORS & WORK/LIFE BALANCE

I found mentors at every stage of my career, many but not all of whom were women. They were people I admired and who had skills that I wanted to develop, for example being successful grant writers. These people were pivotal to me in their encouragement and support.

Balancing family with science has been hard. It requires a very supportive spouse. I still feel sad about certain events in my son's life that I missed. But my son is proud of me. He spent a lot of time in my lab, and I spent a lot of time driving between my lab and his school so that I could serve cookies, or whatever the "normal" mothers were doing. I don't regret any of it, but warn young women that "having it all" is not really possible; family and career take a lot of effort and compromise.

INSIGHTS

Scientific milestones include being the only woman in my postdocs group at UCLA, getting my first NIH R01 grant, establishing an independent laboratory, and after 20 years in the lab, coming to the NIH as an extramural branch chief.

My most inspirational experience was finding incredible mentors and role models who supported me in every way. I remember finishing a grant renewal late on a Saturday night with two of my female colleagues and mentors there with me. It is that kind of mutual support, established women helping those more junior, which is the best hope for the success of women scientists.

Kathryn Christine Zoon, Ph.D.

Director, Division of Intramural Research

EDUCATION

Ph.D.: (Biochemistry) The Johns Hopkins University, 1976

B.S.: (Chemistry) Rensselaer Polytechnic Institute (RPI), 1970

RESEARCH INTERESTS

Interferon, cytokine biology, signal transduction

PIVOTAL EVENTS

Many experiences influenced my career and achievement. Early on, an interest in chemistry was sparked both by my uncle Robert Pollock, a chemist for General Foods, whom I greatly admired, and by the great interest in science at the time. At RPI, my mentor, Stanley Bunce, encouraged me to advance my career in chemistry. It was with this encouragement and the support of my mom and dad, uncle and husband, that I pursued a Ph.D. in biochemistry at Johns Hopkins with John Scocca. John taught me survival skills that have benefited me throughout my career. My postdoctoral mentor and Nobel Prize winner, Christian Anfinsen, taught me that being the best was dependent not only on how smart you were, but also on caring for all the folks with whom you worked. This lesson has shaped my success as has his other lesson—the importance of always being prepared.

MENTORING & WORK/LIFE BALANCE

The help of my parents, August and Violet Egloff, made it possible for me to pursue this career by helping to care for my

two daughters, Chrissy and Jenny. Without their support, this would have been close to impossible.

INSIGHTS

As Julia Childs said, the most important parts of cooking are ingredients and timing. This was particularly true for my career at the FDA, which I joined at the dawn of the new biotechnology revolution. I used my skills to capitalize on the opportune timing and advanced through the ranks of the FDA at the encouragement of my family, particularly my husband, Bob, FDA leadership, and Ruth Kirschstein, then Deputy Director of NIH. With their support of my efforts, I became the Director of the Center of Biologics at the FDA where I led a team of dedicated staff for 10 years overseeing the safety and efficacy of vaccines, biotechnology products, blood, and blood products. Al Rabson and Ruth Kirschstein encouraged me to return to the NIH in 2003, which was my ultimate desire. After spending two great years with the Center of Cancer Research, I was lured back to my love of public health infectious disease challenges and joined the NIAID. I had come full circle back to my roots and I am thoroughly enjoying the challenge of being the Scientific Director (SD) of the Division of Intramural Research (DIR).

Yasmine Belkaid, Ph.D.

Head, Mucosal Immunology Unit, Laboratory of Parasitic Diseases, Division of Intramural Research

EDUCATION

Ph.D.: (Immunology) Orsay University, Pasteur Institute, Paris, France, 1996

Diplome d' Etude Approfondie (DEA): (Immunology) Orsay University, Pasteur Institute, Paris, France, 1991

M.S.: (Biochemistry) University of Science & Technology Houari Boumediene of Algiers, Algeria, 1990

B.S.: (Biochemistry) University of Science & Technology Houari Boumediene of Algiers, Algeria, 1989

RESEARCH INTERESTS

Understanding the mechanisms underlying pathogen persistence, in particular, in the context of parasitic infections

PIVOTAL EVENTS

Of the experiences that have stimulated my research career, being exposed to research on parasitic diseases in endemic areas during my training was the first to shape my success. Having supervisors that understand the demands of a family life and having the support of several mentors has also been pivotal in my development and achievement as a scientist.

MENTORING & WORK/LIFE BALANCE

The balance of family and professional responsibilities for me has only been achieved because my companion considers my career as important as his own. As well, access to day care on campus was important during the early childhood of my children.

Nancy D. Bridges, M.D.

Chief, Transplantation Immunobiology Branch, Division of Allergy, Immunology, and Transplantation

EDUCATION

Fellow: (Pediatric Cardiology and intervention) The Children's Hospital, Boston, 1988–1991

Intern/Residency: (Pediatrics) The Children's Hospital of Philadelphia, 1985–1988

M.D.: New York University School of Medicine, 1985

B.S.: (Nursing) Columbia University, 1978

RESEARCH INTERESTS

I am a pediatric cardiac interventionist and transplant physician by training. My research interests are in translational and clinical investigations in organ and pancreatic islet transplantation, specifically early recognition of alloimmune activation and quiescence, and of graft acceptance and rejection; immunologic tolerance in transplant recipients; the identification of immunologic biomarkers that will allow for individualized, pre-emptive immunomodulatory therapies to prevent rejection; and the advancement of pancreatic islet transplantation to a therapy with equipoise and durable benefit.

PIVOTAL EVENTS

An early decisive moment in my career occurred before I went to medical school. I watched a young woman pediatric cardiologist walk up to the bedside of a critically ill infant and, using physical examination skills, make a diagnosis and direct therapy. This made a profound impression on me and influenced my view of medicine as a discipline requiring the ability to solve complex problems and make decisions based on the analysis of data—often inadequate—learned through observation. Subsequently, the greatest influences on my scientific career have been the result of being mentored by and forming professional collaborations with extraordinarily talented and innovative physicians and scientists who, in addition to being inspirational as a result of their own achievements, were able to help me learn how to learn, how to be self-critical, and how to teach.

MENTORING & WORK/LIFE BALANCE

Teaching has always been an important part of my career, and has taken many forms, from the design and implementation of structured didactic programs to establishing durable mentoring relationships with physicians in training, to nurturing the careers of the staff in my branch here at Division of Allergy, Immunology, and Transplantation (DAIT).

Interest in—or preferably a passion for—things outside of science contribute in obvious and subtle ways to career success. I don't think it matters very much whether the focus is skydiving, rock climbing, or—as in my case—things that are considerably more mundane, such as reading and discussing books and playing the cello.

Melody C. Carter, M.D.

Staff Clinician, Mast Cell Biology Section, Laboratory of Allergic Diseases, Division of Intramural Research

EDUCATION

Fellowship: (Allergy/Immunology) NIAID, 2000–2002

Residency: (Pediatrics) Emory University, 1981–1984

M.D.: Tulane University Medical School, 1981

B.S.: (Biology) Newcomb College, Tulane University, 1977

RESEARCH INTERESTS

Pediatric mastocytosis, pediatric asthma, anaphylaxis

PIVOTAL EVENTS

The pursuit of a career in research was prompted by the care of inner-city children with asthma and allergic diseases and the impact of their environment on disease morbidity. I began clinical research as an Assistant Professor in pediatrics at Emory University. This experience was the impetus for my pursuing a career in Allergy/Immunology at the NIH. The mechanisms of allergic and immunologic disease development as well as the increased incidence are particularly complex in minority inner-city populations. Consequently, I have been involved in asthma research and inflammatory mechanisms.

The mast cell is central in the development of allergic disease. Opportunities at the NIH have allowed me to develop expertise in patients with mastocytosis, a disease of abnormal proliferation of mast cells. Understanding the mechanisms of mast cells in allergic diseases has enhanced my understanding of the mediator effects of mast cells and is precipitating investigations of new therapeutic approaches.

MENTORING & WORK/LIFE BALANCE

Thomas Platts-Mills has been my most influential mentor for starting a career in Allergy/Immunology research. His guidance and expertise have been immeasurable. I began a clinical research project on inner-city asthma and environmental modification to evaluate its impact on disease morbidity. This experience ignited an interest in this field and a desire to pursue A&I after 15 years of general pediatrics.

Since completing my fellowship and becoming a staff clinician at the NIH, Dean Metcalfe has guided my career and continues to exemplify the proficiency required to maintain a career in research. He is a prolific and well-respected author and I am benefiting from his expertise to expand my knowledge in a new field and publish sound research.

My husband has been very supportive and my most ardent fan since I have changed career paths. His encouragement and patience has allowed me the opportunity flourish in a new endeavor.

Christine W. Czarniecki, Ph.D.

Chief, Office of Regulatory Affairs, Division of Allergy, Immunology, and Transplantation

EDUCATION

Staff Fellow: (Laboratory of Experimental Pathology) National Institute for Arthritis, Metabolic and Digestive Diseases, NIH, 1978–1981

Ph.D.: (Microbiology) Georgetown University, 1978

B.S.: (Biology) Muhlenberg College, 1972

RESEARCH INTERESTS

The biological and biochemical mechanisms of interferon action on retrovirus replication; the effects of interferons and other cytokines on infectious diseases of clinical significance; the scientific aspects of the drug development process; interferons, cytokines, monoclonal antibodies, and small molecules as therapies for clinical indications including asthma, cancer, and infectious and autoimmune diseases

PIVOTAL EVENTS

The most significant event that affected my scientific career occurred when, in the early 1980s, after a 3-year fellowship at NIH, I took a huge risk (which later turned out to be a great opportunity) and joined a small group of scientists who had started a fledgling company called Genentech, Inc. It was the

birth of the biotechnology industry and I was given the opportunity of being a part of its creation. At that time, the pharmaceutical industry was not viewed as a place where high-quality research could be carried out and published. At Genentech, we scientists set out to change that image and we were successful in doing so. In my 12 years at Genentech, I not only continued and broadened my research from my NIH work, but I was also able to develop significant research collaborations with scientists in academia and government, publishing over 30 scientific papers in peer-reviewed journals and authoring three patents. This network of scientists has been and continues to be a major force contributing to success in my scientific career.

MENTORING & WORK/LIFE BALANCE

In 1950, my parents and I came to the United States as "Displaced Persons," having been displaced from the home country as a result of World War II. The lack of extended family support and lack of formal education as well as language barriers severely limited my parents' ability to provide me with career guidance beyond emphasizing the importance of education. As a result, my teachers and professors became the source of this type of guidance and became my mentors. At each stage of my scientific career, I was fortunate to have a mentor who helped me identify opportunities that would lead me to a new level—always moving forward and upward. Since these mentors were critical to my success, I strongly support and encourage mentoring activities and I feel a strong obligation to serve as a mentor, for others, whenever possible. I have participated in many programs encouraging young women in science at the high school and university level and have served as a panelist in different programs-discussion options in scientific careers. In my current NIH position, I lead a staff of degreed (Ph.D. and M.D.) as well as nondegreed individuals and thus have many opportunities for mentoring. With regards to balancing family with professional responsibilities, the family responsibilities that have faced me center on care and support of my parents. The challenges in providing care to an aging parent are significant and thus, at times, my career choices and decisions have been influenced by those needs.

Maria Y. Giovanni, Ph.D.

Assistant Director for Microbial Genomics and Advanced Technologies, Division of Microbiology and Infectious Diseases

EDUCATION

Staff and Senior Staff Fellowship: National Heart, Lung, and Blood Institute, NIH, 1982–1988

Postdoctoral Fellowship: University of Pennsylvania, 1981–1982

Ph.D.: (Molecular Biology) University of Pennsylvania, 1981

Graduate Fellowship: University of Pennsylvania, 1976–1981

B.A.: (Biology) University of Pennsylvania, 1976

RESEARCH INTERESTS

Infectious diseases, microbial genomics, proteomics, bioinformatics, public health, technology development, medical diagnostics

PIVOTAL EVENTS

As an undergraduate biology major at the University of Pennsylvania, my career path was pediatric medicine. When my father died suddenly during my sophomore year, my world was turned around. I needed to find a job that would provide a learning experience and spending money. While perusing work–study positions, one caught my eye. I made an appointment with Penn professor Dr. Mary Catherine Glick and was fortunate to be offered a job in her lab. The lab became my home and passion, setting my career in motion. I went onto pursue a Ph.D. in molecular biology and did my thesis work there.

Over the past 25 years, from my postdocs to my current position, Dr. Glick has continued to be my mentor. One small event, pursuing a job opportunity posted on a bulletin board, changed my life. I love my career and the intellectual pursuits that it continues to provide.

MENTORING & WORK/LIFE BALANCE

A number of factors have allowed me to pursue a successful career at the NIH as a scientist and to be a working mother and wife. These include a flexible work schedule, a supportive husband, stable and nurturing daycare, home within a few miles of NIH, and mentors and colleagues who understand the demands of the balancing act.

In spite of the time challenges, feeling engaged in my work helps me to be more energized with my family. Because of my

career, I've had the opportunity to become involved in school activities such as chairing and participating in science days and fairs, organizing our elementary school's first after-school science club, and serving as science educator at the National Eye Institute's Vision School Program. My daughters have grown up understanding the importance my career holds for me and it has added an extra dimension to our relationship.

Kyung J. Kwon-Chung, Ph.D.

Head, Molecular Microbiology Section, Laboratory of Clinical Infectious Diseases, Division of Intramural Research

EDUCATION

Ph.D.: (Bacteriology), University of Wisconsin, 1965

M.S.: (Bacteriology), University of Wisconsin, 1963

M.S.: (Biology) Ewha Womans University, Seoul, Korea, 1958

B.S.: (Biology) Ewha Womans University, Seoul, Korea, 1956

RESEARCH INTERESTS

Pathogenic mycology in general, pathobiology of the fungi that cause aspergillosis and cryptococcosis

PIVOTAL EVENTS

An invaluable experience led me to become a mycologist and inspired my career. My desire to be a scientist stemmed from a strong interest and a fascination I had of the biological world since my early childhood. In light of my strong interest, choosing biology as my major in college was a natural decision. However, my choice of mycology as a focus was inspired by an exceptional degree of dedication by my late professor, Dr. Marion Backus, at the University of Wisconsin. This mentorship was an invaluable experience and the decisive factor in achieving the success in my mycology career. Among other important factors in my career has been the NIH environment, which has afforded me the luxury of pursuing risky projects that may have been discouraged at universities where cost effectiveness can be a major concern. Last, but not least, strong family support was the most important factor.

MENTORING & WORK/LIFE BALANCE

Mentoring young scientists as they enter research careers has been very rewarding. The challenge in mentorship has not been the directing of their research, but in grooming them to be excited about the field of research for the long term.

It was not an easy task to balance family and professional responsibilities. While my three children were very young, my mother played a pivotal role in complementing my duties to raise them. Having a very thoughtful and supportive husband was also a critical factor that helped me with my responsibilities.

Sharon Henrietta Jackson, M.D.

Tenure-Track Investigator and Head, Monocyte Trafficking Unit, Laboratory of Host Defenses, Division of Intramural Research

EDUCATION

Research Fellowship: (Allergy/Immunology) NIAID, 1996–2001

Clinical Associate: (Allergy/Immunology) NIAID, 1991–1996

Residency: (Pediatrics) Mount Sinai Hospital, New York, 1988–1991

M.D.: State University of New York at Buffalo, 1988

B.A.: (Psychology) Williams College, 1982

RESEARCH INTERESTS

The ongoing investigations of the Monocyte Trafficking Unit are focused on characterizing the role of reactive oxygen species (ROS) in T lymphocyte homeostasis and function. The interrelated objectives of our research program are characterizing NADPH oxidase and NADPH oxidase-derived ROS regulation of T cell function, characterizing the role of the NADPH oxidase in regulating the molecular communication signals between dendritic cells and T cells, and investigating the role of NADPH oxidase and NADPH oxidase-derived ROS in the pathogenesis of chronic inflammatory and autoimmune diseases.

PIVOTAL EVENTS

Targeted gene deletions and genetically engineered knockout mice with diseases that mirror exactly the human diseases. "Wow, you can do that?" is what I thought as I sat listening to what would be my fellowship project. I heard it, I tried it, and I succeeded at it! Nothing fosters passion to pursue a dream or goal like success; however, success often carries with it accompanying obstacles and challenges. Learning to endure these challenges has strengthened and focused my resolve to overcome the obstacles while advancing my research to the next level. So I thrive on the infinite possibilities of using science to solve problems and make new discoveries that will impact human health.

NIAID

MENTORING & WORK/LIFE BALANCE

As one of the few African American females seeking to become a tenured physician–scientist within the NIH intramural program, I have enjoyed mentoring students at all levels of training. The most valuable lesson I have learned from these experiences is that a positive mentoring relationship requires definitions and ongoing discussions about expectations for the mentoring relationship. This lesson has helped me remain positive in my endeavors and avoid being burdened or disappointed when my expectations for mentoring have been unfulfilled.

Balancing career and family has helped me be more positive and accepting of my best efforts at work and at home. Hope guides me and I expect positive outcomes. Everyday is an adventure for my son and me. I have learned to cull resources, eliminate distractions, and remain focused on the agenda for the day without guilt for my choices. Now that I am a parent, I feel my life is balanced!

Susan K. Pierce, Ph.D.

Chief, Laboratory of Immunogenetics,
Division of Intramural Research

EDUCATION

Ph.D.: (Immunology)
University of Pennsylvania, 1976

M.S.: (Microbiology)
Yale University, 1974

B.S.: (Microbiology) Pennsylvania State University, 1971

RESEARCH INTERESTS

The cellular and molecular mechanisms by which the immune system's B lymphocytes are activated to differentiate into long-lived memory B cells and antibody-secreting cells and the influence malaria infections have on this process

PIVOTAL EVENTS

As I look back, I can't define a critical point around which my scientific career pivoted. Each phase of my career seemed extraordinarily challenging at the time, beginning with graduate school, through postdoctoral training, to my first faculty position, up through the ranks, and most recently as a lab chief at NIAID. But with encouragement, some luck, and hard work, my career was built step by step. Of course, there were times when the going seemed tough, but these times were balanced by good times and the sheer exhilaration that comes with discovery. Being closer to the last step than the first step in my career, I know that in science you never really arrive; there is always a next step.

MENTORING & WORK/LIFE BALANCE

As a senior scientist, I am often asked by young researchers just starting their careers, "Is it really possible to have children and a successful career?" You'll need the support of your husband and mentoring throughout your training and independent research career, but with these, having both a family and a career is possible. My answer is simply, "Yes, if that's what you want to do." I have three grown children and by my recent marriage, a stepdaughter and three grandchildren. It is fair to say that my children always come first, but even with that immutable priority, there is still time and energy to lead a productive professional life. I have no doubt that families balance careers and in return, careers balance families. With some luck, you can have the best of both worlds.

Suzette A. Priola, Ph.D.

Senior Investigator and Chief,
TSE/Prion Molecular Biology Section,
Laboratory of Persistent Viral Diseases,
Division of Intramural Research

EDUCATION

Ph.D.: (Microbiology and Immunology)
University of California, Los Angeles, 1990

B.S.: (Biology) University of New Mexico, 1985

RESEARCH INTERESTS

Prion/amyloid diseases, protein misfolding and neurodegeneration, viral and molecular mechanisms underlying diseases of the central nervous system, general viral pathogenesis, therapeutics

PIVOTAL EVENTS

Two experiences were particularly central to shaping my success as a scientist. The first was choosing to do a postdoc with an excellent mentor, Dr. Bruce Chesebro, at the NIH Rocky Mountain Laboratories. This was crucial in my development as a scientist as I was given the freedom to think both scientifically and creatively. My appointment as a member, and later Chair, of the FDA transmissible spongiform encephalopathies (TSE) Advisory Committee was also pivotal. This experience was invaluable in that it provided insight into how what we do at the bench and the resultant expertise and experience gained can have a profound impact on everyday lives. That experience drove home the absolute requirement to always do relevant, interesting, and hopefully groundbreaking science as rigorously and creatively as possible.

MENTORING & WORK/LIFE BALANCE

I consider mentoring new researchers, both when they are members of my lab and after they leave the lab, to be one of the most important aspects of my work as an NIH scientist. I firmly believe that you cannot mentor by just passing on facts or providing technical training—you have to teach people to think both scientifically and creatively and give them the confidence to do so. Open communication between the PI, students, postdocs, etc., is therefore a must. I have found that open communication inevitably leads postdocs and students to come up with their own ideas and approaches. It also increases the confidence of young researchers that they do, or don't, have the ability to run their own lab.

Helen Rita Quill, Ph.D.

Chief, Basic Immunology Branch, Division of Allergy, Immunology, and Transplantation

EDUCATION

Ph.D.: (Biochemistry) Massachusetts Institute of Technology, 1979

B.A.: (Chemistry) Trinity College, Washington, DC, 1968

RESEARCH INTERESTS

Basic immunology and the application of immunological principles to the prevention and treatment of human disease

PIVOTAL EVENTS

But for a terrific high school chemistry teacher, and a science fair project on the wonders of chelation, I would have become another unemployable art history or English major and missed out on the intellectual excitement unique to scientific work. Remarkably generous and expert mentoring was provided to me first as a laboratory technician and then as a formal graduate student and postdoctoral fellow. Federal training funds allowed me the time to develop my own expertise and the opportunity to discover previously unknown facts about important aspects of biological systems. Great mentoring was the key. Nearly as important was the free exchange of ideas and critiques among my peers at each stage of development.

MENTORING & WORK/LIFE BALANCE

Balancing professional responsibilities with personal goals and activities is difficult in any career that engages one's strong interest and commitment. The obvious and sometimes overwhelming demands of laboratory work are unavoidable if success is expected. And as it turns out, even the administrators of science, although freed from the need to harvest cell cultures or inject mice at 2 am, are subject to unpredictable demands on their time to accomplish important goals. An ungrudging willingness to expend extra effort is essential, and a flexible work schedule and advance planning go a long way toward making it possible to also engage in rewarding activities separate from work. Even with a flexible work schedule, balance is best obtained if nonwork routines and special activities are at least penciled-into the calendar well in advance, so that time doesn't pass unknowingly before the realization that work has consumed the past many months.

Polly R. Sager, Ph.D.

Assistant Director for International Research in Infectious Diseases, Division of Microbiology and Infectious Diseases

EDUCATION

Ph.D.: (Toxicology)
University of Rochester, 1982

M.S.: (Toxicology)
University of Rochester, 1980

B.S.: (Zoology)
Houghton College, 1971

RESEARCH INTERESTS

Infectious disease research relevant to developing countries (malaria, tuberculosis [TB], influenza, tropical diseases), infrastructure development and support in resource-constrained settings, particularly involving clinical research, networking, and partnerships to maximize scientific success in developing countries

PIVOTAL EVENTS

My career has taken many twists and turns over the years as I've transitioned from neurodevelopmental toxicology to my current international work on infectious diseases and infrastructure development in resource-constrained countries. I have taken advantage of opportunities to change directions that have enabled me to grow as a scientist and science manager. When I came to NIAID in 1989, I helped develop animal models for testing efficacy of an antiviral drug against AIDS. Later, when biodefense became paramount, I was able to apply my knowledge and experience to developing initiatives for the rapid acceleration of biodefense research. My work on international AIDS initiatives also helped me to move into the broader area of standardizing and coordinating research support and infrastructure in developing countries. I feel that this helps to ensure that research in developing countries meets the highest quality standards and therefore leads to improved health.

MENTORING & WORK/LIFE BALANCE

Thankfully, I never had to choose between family and career. That simply wasn't an option since I was a single mother while a graduate student, postdoc, and during my early professional career. I have been, and continue to be, blessed with mentors and supervisors who trust me to make the hour-by-hour decisions needed to balance responsibilities—and who are willing to consider creative solutions. My daughters not only survived, but are now established in their own successful careers.

Some of my most memorable mentors taught me "how the system works." These are lessons rarely offered—but are the most valuable for career advancement. One should never be shy about asking for mentoring because the lessons learned are invaluable. I thank my mentors and supervisors—male and female—for their guidance and support.

Kanta Subbarao, M.D.

Senior Investigator, Respiratory Viruses Section,
Laboratory of Infectious Diseases,
Division of Intramural Research

EDUCATION

M.P.H.: (Epidemiology) University of Oklahoma Health Sciences Center, College of Public Health, 1988

Fellowship: (Pediatric Infectious Diseases) Oklahoma Children's Memorial Hospital, University of Oklahoma Health Sciences Center, 1985–1988

Internship and Residency: (Pediatrics) Cardinal Glennon Memorial Hospital for Children, St. Louis University, 1982–1985

M.B.B.S.: Christian Medical College, Vellore and the University of Madras, India, 1982

RESEARCH INTERESTS

Development of vaccines against pandemic strains of influenza and the development of animal models and evaluation of vaccines against the severe acute respiratory syndrome (SARS) coronavirus

PIVOTAL EVENTS

I grew up on a university campus surrounded by academics and researchers, including my father. My family instilled in me a respect for hard work and encouraged me to seek the best training available in the field I chose. I attribute part of my success as a scientist to being in the right place at the right time. I was at the CDC in Atlanta when the first cases of avian H5N1 influenza occurred in Hong Kong in 1997. Studying the viruses from that outbreak stimulated a change in the direction of my career, from research on human influenza viruses to avian influenza viruses infecting humans. Three months after I joined the NIH, the SARS outbreak occurred. I was able to initiate an exciting new research program on SARS because I had experience working with avian influenza viruses, had access to the appropriate containment facilities, and was given the resources and support necessary to work on the newly identified SARS-coronavirus.

MENTORING & WORK/LIFE BALANCE

I have made two significant transitions in my professional life, first in moving to the United States after completing medical school in India and many years later, from clinical medicine to a laboratory research career at the NIH. I have been fortunate in being able to make these transitions smoothly and feel that they have enriched my career. I am also grateful to my mentors. In addition to providing advice and training, a mentor can facilitate opportunities and recognition of one's work. The mentor may introduce a young scientist to other scientists in the field, pass along opportunities to speak or write or nominate them to professional societies.

A supportive and understanding spouse makes it easier to balance family and professional responsibilities. In my experience, one of the most significant challenges faced by two-career couples is in searching for jobs and balancing the options that are available to both, recognizing that compromise is essential.

National Institute of Arthritis and Musculoskeletal and Skin Diseases

Joan A. McGowan, Ph.D.

Director, Division of Musculoskeletal Diseases, Extramural Program

EDUCATION

Ph.D.: (Cell Biology)
Brown University, 1978

M.S.: (Nutrition)
Cornell University, 1968

B.S.: (Chemistry)
Marymount College,
New York City, NY, 1966

RESEARCH INTERESTS

My main research interests are in translational and clinical bone disease.

PIVOTAL EVENTS

I was very slow to understand that a woman could make a career in science. When I started college, I hadn't met many college graduates except my teachers, who were mostly nuns. I had a wonderful chemistry teacher in my first year of college who convinced me that you could have a normal life and be a scientist—well, maybe we were wrong about that or overly optimistic! I think the most important characteristic women scientists can develop is resilience. Things don't always work out the way you expected or in the timeframe you gave it—life is like a scientific experiment and you have to be alert to the unexpected and follow up on directions you never imagined when you started. As John Lennon said, "Life is what happens, while you are making other plans."

MENTORING & WORK/LIFE BALANCE

I had wonderful mentoring as a graduate student at Brown, but little to none during my postdoctoral and early faculty years at Harvard. I learned a lot from that about how important it is to give advice and encouragement to young investigators, not only about the science, but about career moves and the importance of playing on teams outside your own environment. Young scientists should get mentoring from the people they work most closely with, but often they don't, and I tell them to seek out mentors and guidance from wherever they can find it.

I taught high school chemistry and biology, worked as a technician in two different laboratories, and had two children before I began my Ph.D. Balance of work and family life is not something you achieve every day. Some days you have to be there totally for the family and other times your head must be in your work. You miss a few things in both arenas while you are juggling, but your life is richer and maybe a former "soccer coach/

Mom" can make use of the skills acquired managing people. I was very fortunate to have a very supportive scholar husband and when my children were school age, my mother came to live with us, making us a three-parent family. My advice to women professionals is that life is long and you don't have to accomplish everything in the first two decades out of college.

INSIGHTS

NIH has really given me a chance to tap into talents and to do work I would never have had a chance to do in an academic institution. I have organized two large consensus conferences and served as the Senior Scientific Editor of a Surgeon General's Report on Bone Health and Osteoporosis. I also worked with the Women's Health Initiative from its inception. I have had the chance to try to enhance and facilitate scientific careers, of both women and men, through counseling about grant applications, but also by selecting people for panels and workshops and conferences that gave them a chance to be seen and appreciated. I am very proud to have received the Leadership Award from the Women in Orthopedics for mentoring women in that field. Most of what has brought me the greatest satisfaction is beyond my "day job." So I would say that taking advantage of opportunities to do volunteer work within the framework of your current job and position can be one of the most important things you can do for your career and your life. And, as a mentor, my goal is to offer those opportunities to others.

Ivona Aksentijevich, M.D.

Group Leader, Microarray Unit and Director, Molecular Diagnostics Lab, Genetics and Genomics Branch, Intramural Research Program

EDUCATION

NIH Genetics Fellowship:
(Clinical Molecular Genetics)
NIH, 1997–1999

Postdoctoral Fellowship:
(Arthritis and Rheumatism)
NIAMS, 1990–1995

M.D.: University of Belgrade, Medical School, Belgrade, Serbia, Yugoslavia, 1986

RESEARCH INTERESTS

Genetics and genomics of human inflammatory diseases

PIVOTAL EVENTS

I came to NIH soon after graduating from a medical school in Yugoslavia without any research experience. The first couple of years were very stressful, as I had to learn both the English language and the language of science. Looking in retrospect at the past 18 years, I think the most important factor in my career has been having an inspiring mentor. If it had not been for Dr. Daniel Kastner and his boundless love and enthusiasm for science, and for his compassionate nature, I am not sure whether I would have stayed in the demanding field of research. Our team battled for seven years until we cloned a gene causing an inflammatory disease. I will always remember the hardships and many disappointments we lived through, and of our joy once we had the culprit gene. A competent and kind mentor makes a lab a joyful and welcoming place to work.

MENTORING & WORK/LIFE BALANCE

As a mother of five, who is also working a full-time job in science, I feel that I have had to truly develop a sense of balance, efficiency, and self-discipline in order to make the two worlds mesh harmoniously. That is to say, that at any given moment, one side might have to take a break from the spotlight in order for the other to get a chance to further develop. And yet, somehow, through this constant compromise, both sides have intertwined such that they play off each other in the best way possible. My children might never have had a mom waiting at the school bus stop, but they have a mom of whom they are very proud. And while my students at work do not have a mentor available during late hours, they do have a mother-like teacher to coach them through their research work.

Elaine Frances Remmers, Ph.D.

Staff Scientist, Genomics Section, Genetics and Genomics Branch, Intramural Research Program

EDUCATION

Ph.D.: (Microbiology) University of Maryland, College Park, 1982

B.S.: (Biochemistry) University of Maryland, College Park, 1977

RESEARCH INTERESTS

Complex genetics of common rheumatic diseases

PIVOTAL EVENTS

During my career, I have realized that it is important to pursue a scientific question that interests you even if you do not have the expertise to answer it. Find and consult the experts. Learn new methods, if necessary, and tackle a new discipline.

I wanted to know why one rat strain developed severe experimental arthritis while another strain remained unaffected. Although I was not trained in genetics, I delved into genetic studies, realizing that it was the key to the fundamental differences in these strains. When it became apparent that simple

Mendelian genetics could not explain the strain differences, I learned techniques to investigate complex genetics.

My initial question has led to instrumental research in identifying over 20 genetic loci that contribute to disease susceptibility or severity, and generated more than 70 peer-reviewed articles describing animal model studies and their genetic basis. Recently it has also led to the identification of three new genes that contribute to rheumatoid arthritis in man, and two recent *New England Journal of Medicine* publications, including one describing a disease-associated variant of the *STAT4* gene.

MENTORING & WORK/LIFE BALANCE

My mentors have encouraged me to take on new challenges in my work by helping put me in contact with experts and providing resources that made the work possible. Balancing my family and professional responsibilities has been greatly facilitated by my supportive husband and by understanding mentors.

Susana A. Serrate-Sztein, M.D.

Director, Division of Skin and Rheumatic Diseases, Extramural Program

EDUCATION

M.D.: School of Medicine, Buenos Aires University, 1979

RESEARCH INTERESTS

Clinical and translational research on rheumatic diseases and autoimmunity; influence of genetic, sex, and environmental factors in the development of autoimmune diseases. Immunology, pathology and biopsychosocial approaches to chronic diseases. Research careers of new investigators and participation of women and minority groups in biomedical research.

PIVOTAL EVENTS

The transition from the bench to work on science, management, and administration at NIH was exhilarating and enlightening. I gained new understanding about the complexities of research and the systems that promote and support the most talented scientists in the United States. I enjoyed the opportunities to work with outstanding scientists to influence the direction of research on many chronic debilitating diseases, including many that disproportionally affect women, such as lupus and rheumatoid arthritis.

MENTORING & WORK/LIFE BALANCE

I am responsible for the Division of Skin and Rheumatic Diseases at the National Institute of Arthritis and Musculoskeletal and Skin Diseases where I oversee a large portfolio of grants and contracts dealing with the etiology, pathogenesis, diagnosis, treatment, and prevention of skin and rheumatic diseases. I have mentored students, young college graduates, and more senior professionals who have moved onto successful careers in biomedical research and research administration. I have had great mentors who influenced my career by virtue of their enthusiasm about science and their trust in my abilities. Helping others find a way to use their strengths to advance their careers is a challenge and a great source of personal and professional satisfaction.

I have three children and a wonderful support system at home with my husband and my mother, who have shared with me the joys and responsibilities of raising them. I have been fortunate in that my children also understood that when Mom was working late or at away meetings, it was because she was working with other scientists to find cures for diseases that also affect children. It was not always easy, but having them understand and, when possible, participate in some of those activities helped tremendously.

Madeline Turkeltaub, Ph.D., R.N.

Director, Division of Extramural Research Activities, Extramural Program (Former)

EDUCATION

Certificate: (Adult Primary Care Nurse Practitioner) The George Washington University, 1990

Ph.D.: (Higher Education Administration and Curriculum Development) University of Maryland, College Park, 1980

M.N.: (Neurological Nursing) University of Pittsburgh, 1970

B.S.N.: (Nursing) Long Island University, Brooklyn, NY, 1966

Diploma: (Nursing) Long Island College Hospital School of Nursing, Brooklyn, NY, 1965

RESEARCH INTERESTS

Patient outcomes, asthma and allergic disease, clinical trials management

NIAMS

PIVOTAL EVENTS

As far as I can remember, I have always had an interest in pathophysiology and the causes of cellular malfunction. The profession of nursing allowed me to operationalize my interest. Federal Nurse Traineeships for both my baccalaureate and master's degrees provided full tuition plus a stipend. Although there was no payback required, I have always felt that I had an obligation to public service and have generally fulfilled my career goals in public institutions. My interest in research in patient outcomes came from my desire to provide the most effective and current evidence-based care. As one of the first nurses to chair an Institutional Review Board in Maryland, I was directly involved in protection of human subjects. My experience at NIH started as a Clinical Research Project Manager and has evolved into an extramural Director position, which also continues to include supervision of clinical coordinators and oversight of safe clinical studies/trials.

MENTORING & WORK/LIFE BALANCE

Continuing to practice my profession while having a family stems from a sense of obligation related to the Federal funds expended on my education and the belief that with the help of my husband, a physician, I could balance both work and family. Our mutual understanding of the demands and the satisfaction of providing high-quality patient care was important to our supportive relationship.

My philosophy as a mentor is to maximize the potential of my mentees. I first met my most influential mentor when I was a staff nurse. As Director of Nursing, she chose me to be on a committee and I can still hear her saying what a good job I did. During my career, she reappeared—when I met her again she invited me to work with her on a project that I knew little about, but she said, "I know you can do it," and I did do it! Taking on new challenges is fun, and so is encouraging other people so that they too will develop the confidence to maximize their potential.

IN MEMORIUM:
The NIH mourns the death of Dr. Maddy Turkeltaub in the Spring of 2008. ORWH acknowledges the special role that she provided in overseeing the Specialized Centers of Research (SCOR) on Sex and Gender Factors Affecting Women's Health Program, as well as her many other contributions to the NIH.

National Institute of Biomedical Imaging and Bioengineering

Belinda Seto, Ph.D.

Deputy Director

EDUCATION

Ph.D.: (Biochemistry) Purdue University, 1974

B.S.: (Biology) University of California, Davis, 1970

RESEARCH INTERESTS:

My research interests include protein chemistry of enzymes involved in proline metabolism, protein–protein interactions, and enzyme mechanisms. I have also conducted research in virology, hepatitis viruses. As a research administrator, I was involved in developing clinical trial policies: data and safety monitoring, inclusion of women and minorities in clinical research.

PIVOTAL EVENTS

My junior year in college at the University of California, Davis, was extremely science-intensive. By then, I had taken numerous science courses and enjoyed my experiences with laboratory experimentation. My interests were rewarded when I was given the opportunity to do an honor science project during the following summer. I worked on a research project involving anaerobic metabolism in methane bacteria. In order to understand the various metabolic products generated when these microbes are grown under a variety of conditions, I developed chromatographic methods to identify the metabolites. The project introduced me to the world of research, the quest for the unknown, and the thrill of answering questions about "what ifs."

After completing my doctorate at Purdue University in Lafayette, Indiana, I came to the NIH for postdoctoral training. I was fortunate to work with Dr. Theresa Stadtman in the Laboratory of Biochemistry in the NHLBI. Dr. Stadtman is a world-renowned biochemist who succeeded in the largely male-dominated world of biochemistry in the 1960s. Not only did I gain tremendous experience in biochemistry, Dr. Stadtman was a wonderful role model for an ambitious female scientist.

MENTORING & WORK/LIFE BALANCE

As I developed as an independent researcher, numerous senior scientists, including Dr. Stadtman, took time to mentor me. I learned that it is possible to be both professionally successful and generous to junior researchers. Dr. Stadtman gave me credit for my work by providing the opportunity for me to be the sole author on several publications in prestigious journals.

In addition, I learned the importance of achieving a balance between my personal and professional time. During graduate school, I met my husband who, like me, is a scientist. I am extremely fortunate that he has always supported my professional goals. Early on, we arranged for at least one of us to be home with our three daughters in the evenings. I was able to have time with my children, who have grown into self-confident, independent young women who share our interest in biomedical research.

INSIGHTS

Research endeavors allowed me the opportunity to explore and pursue leads that are often surprising. I will never forget what Dr. Stadtman told me: negative experiments are as important, if not more so, than those that work as planned. It is liberating to recognize that what may seem like failure may indeed be revealing of some unknown concepts. Believing in this philosophy, I have learned to take calculated risks in my career. I decided to have a family before obtaining a tenured or permanent position in the lab. This might have been a risky move because I didn't know the time and energy that children would require of me to be away from the bench. Yet, the decision gave me the most gratifying experience; my daughters are my most successful experiments. Not only did I gain a family, I was also able to achieve recognition in science. Learning that the two are not mutually exclusive was one of my most valuable lessons. Purdue University recently awarded me the Distinguished Alumnus in Science award and receiving the award with my family at my side, I knew that each of my endeavors was worth the fight. Dr. Stadtman bestowed upon me the gift of intellectual fearlessness. I discovered a confidence to push forth, even in trying circumstances, and it is one with which I hope to inspire others.

Eunice Kennedy Shriver National Institute of Child Health and Human Development

Yvonne Thompson Maddox, Ph.D.

Deputy Director

EDUCATION

Ph.D.: (Physiology and Biophysics) Georgetown University, 1981

B.S.: (Biology) Virginia Union University, 1965

RESEARCH INTERESTS

Delineating how inflammatory mediators injure cells and studying gender differences in the vascular system

PIVOTAL EVENTS

My father became critically ill during my senior year in undergraduate school; this meant, given a stay-at-home mother and two younger brothers, that I had to forgo my dream of becoming a physician and find a job. Right out of undergraduate school, with a B.S. in biology and a great sense of faith in myself, I obtained a position as a blood bank technician at the Medical College of Virginia in Richmond. It is because of that job and the woman who managed the blood bank that I am where I am today. That work experience led me to private industry, a graduate degree, academia, and later to NIH.

MENTORING & WORK/LIFE BALANCE

In my late twenties, married, and a mother, I enrolled in graduate school at Georgetown University. As I struggled to obtain the Ph.D. in physiology, I came to fully appreciate the value of mentoring and its role in career building. I had the great benefit of having two exceptionally bright and caring preceptors. One was a woman, an endocrinologist and full professor, who constantly reminded me that I could achieve whatever I desired. In addition, to make sure that my dreams were realized, she was always there to promote me and to keep me on track. The second mentor was a man, a British scientist, full professor and editor of a noted scientific journal. He was my thesis preceptor and he emphasized that "nothing took the place of good training," and the necessity for obtaining a basic core of knowledge in the sciences in order to be successful as a researcher. He encouraged me to be innovative and to be constructively critical. While he admitted that many female students faced tougher obstacles than male students, he encouraged me to visualize what I wanted in a career and to expect nothing short of that vision. Thus, I found ways to juggle the child, the house work, the business trips, the lectures, the grant writing; and in doing so, was able to instill in my son, now a successful architect, that skill of "keeping all the balls in the air." "Taking hold of and tackling the situation at hand" is also the message that I

have conveyed to the many budding scientists and administrators whom I have mentored.

INSIGHTS

Serving as the Deputy Director of the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD) enables me to fulfill my life-long dream, to help protect and promote the health and well-being of women and children, especially those who may be vulnerable because of the circumstances in which they are born and live. NICHD research focuses on areas that are critical to women and children and to our Nation's health: child development, developmental biology, nutrition, AIDS, intellectual disabilities, population issues, reproductive biology, contraception, pregnancy, and medical rehabilitation. My role is to guide and oversee NICHD organizations and programs and to work with other NIH Institutes and Centers and with outside groups and institutions.

I value the hard work and the many rewards of my research career, but also know that discoveries in the laboratory and insights gained at the bedside cannot help individual women and children unless these discoveries and insights shape the programs and policies that affect the health of populations. In addition, it is critical that partnerships be forged with the many publics that benefit from and impact upon medical research. So, I am fortunate to be able to lead many activities to improve the health of special populations, both domestically and abroad. For example, NICHD supported research that showed that putting infants to sleep on their backs reduces the risk of sudden infant death syndrome (SIDS). Working with the American Academy of Pediatrics, we have translated this science into the national "back to sleep" campaign, and U.S. SIDS rates have dropped by more than 50 percent. I have subsequently drawn upon the strengths of the African American community in a national coalition to bring greater reduction of SIDS rates in African American children.

I have learned from each of my positions at the NIH, including the time I served as Acting Deputy Director, NIH, the value of establishing collaborations and enhancing communications in moving our scientific advances to the populations who are most in need. As Co-Chair of the NIH's Public Trust Initiative, I work with colleagues and NIH's many publics to enhance understanding and trust of medical research. It was an honor to colead the Department of Health and Human Services National Strategy to Prevent Teen Pregnancy and the Department's Race and Health Disparities Initiative, and to help develop the agenda to address the challenges we face in reaching underserved populations in which poverty and cultural barriers interfere with delivering effective, vital health messages.

Jennifer Lippincott-Schwartz, Ph.D.

Chief, Section on Organelle Biology, Cell Biology and Metabolism Program, Division of Intramural Research

EDUCATION

Ph.D.: (Biochemistry) The Johns Hopkins University, 1986

M.S.: (Biology) Stanford University, 1979

B.A.: (Psychology and Philosophy) Swarthmore College, 1974

RESEARCH INTERESTS

Understanding how intracellular organelles are assembled and inherited, and how proteins move within cells; development of quantitative tools and methods for analyzing proteins and organelle dynamics in living cells

PIVOTAL EVENTS

The most pivotal event in my experience as a scientist was recognizing the power of live cell imaging with Green Fluorescent Protein (GFP). This occurred early in my career as an independent investigator when I started using GFP in experiments. At the time, GFP was viewed simply as a new type of reporter molecule. I soon realized that by employing techniques such as photobleaching and photoactivation in living cells, GFP could be used as a quantitative tool to measure intracellular protein diffusion, protein binding/dissociation rates, and transport kinetics in single cells. This, in turn, led me to collaborate with biophysicists and physicists to employ kinetic modeling approaches to address key organizational principles of endomembrane structure and function.

MENTORING & WORK/LIFE BALANCE

As a proud mother of two and with a husband busy negotiating peace agreements at the U.S. State Department, I have always walked a tight rope in balancing family with professional responsibilities. Two approaches have helped in this process. One is having a clear perspective on the relationship of home and work. My family knows that I am committed first to them and then to doing science. This makes them supportive when there are events or periods at work that require more of my time and energy. A second is pacing one's style of doing work. I've discovered that continuous, small steps at work often lead more quickly to real accomplishment in science than large bursts of work that drain all your energy. One needs to know exactly when crunch time is for a project. Then one goes all out.

Regarding mentoring, I have found that it is very important not to prejudge the abilities of your students and postdocs. Time and again I have been amazed by their growth in doing science. Also, I feel it is very important to listen to students and postdocs and to respect their ideas. The students and postdocs in my lab always provide significant input of ideas and direction into the projects they are working on.

INSIGHTS

In being in the forefront in the use of quantitative, live cell imaging with GFP fusion proteins, my lab has been able to discover a variety of new features of organelles and protein transport pathways. These discoveries, however, have not always been met with the most enthusiastic response, especially when they contradict existing paradigms. I've found that extraordinary determination and patience are important for weathering these storms. It is also important to rise above the fray by listening to your critics and then concentrating on doing new experiments to shed additional light on a problem.

Germaine M. Buck Louis, Ph.D., R.N.

Senior Investigator and Chief, Epidemiology Branch, Division of Epidemiology, Statistics, and Prevention Research

EDUCATION

Ph.D.: (Epidemiology)
State University of NY
at Buffalo, 1987

M.S.: (Epidemiology)
State University of NY
at Buffalo, 1980

B.A.: (Sociology)
State University of NY
at Buffalo, 1978

R.N.: Millard Fillmore
School of Nursing, 1975

RESEARCH INTERESTS

Environmental determinants of human fecundity and fertility, development of methodologies for measuring exposures during critical or sensitive windows of human development for the assessment of reproductive toxicity

PIVOTAL EVENTS

My passion for reproductive epidemiology has continually served as a source of my motivation. Upon reflection, two pivotal factors have positively affected my ability to succeed: 1) supportive mentors, and 2) seed money for new investigators. Young investigators need mentors who will listen, encourage, and actually assist them in the transition to independent investigator. Without exception, I am continually reminded how much of my success is attributed to past and current mentors. Secondly, seed money is critical to help young investigators succeed, and I was fortunate to have this resource available to me. Funding allowed me to get started, learn the ropes, and build my confidence. Lastly, being a mother made me a better researcher. I have never designed a protocol asking study participants (or their families) to do something I would not do or ask of my family. I believe this has served me well without losing any scientific integrity.

MENTORING & WORK/LIFE BALANCE

My first mentors were all men who were dedicated to their professions and families, as were my former department chairs. As a mother of four and a long-time provider of elder care, I never have felt guilty when my professional responsibilities were temporarily offset by family responsibilities. This balancing act is dynamic and often changes in an unpredictable way, underscoring the need to be flexible. I was fortunate to have a flexible work environment that empowered me to decide where, when, and how I would work to the extent possible in academe. The tone for a balanced professional and personal life was set from the top down, requiring no one to apologize for wanting to be defined by more than one's profession. As scientists, we are selectively highly motivated. Tapping into this motivation by offering a flexible work environment allows life to define our professional demands rather than the reverse.

INSIGHTS

I can think of three milestones that fostered my professional development, beginning with the completion of the academic requirements for an earned doctorate. As I was completing my degree in 1987, I was very interested in competing for the Abraham Lilienfeld Student Prize Paper Award offered by the Society for Epidemiologic Research in recognition of the best student-authored dissertation paper. Despite being discouraged from competing by my department chair (his advice was that the award normally went to students in the top schools), I was strongly encouraged to apply by my mentor, whose unconditional support was a continual source of motivation for me. He remains my mentor to this day. From this experience, I learned how to make "no" a motivating influence in my life.

The second major milestone was earning tenure at my previous institution despite underrepresentation of women amongst the tenured medical school faculty. Tenure is incredibly liberating and bestows recognition (both internally and externally) about one's ability to conduct original research, train the next cadre of students, and serve one's profession and institution.

Tenure is achievable even if the timeline requires flexibility to accommodate the responsibilities associated with raising young children or providing elder care, such as in my case. Without question, I believe being a mother and daughter made me a better reproductive epidemiologist.

Another important milestone was being asked to serve The National Academies by working on some of the most pressing problems facing the American people. Serving on panels with experts from various disciplines is challenging, informative, and just plain fun. There is a cost in that time spent may mean fewer papers. However, time spent opens new career avenues such as those involving the synthesis of information with regard to public policy and advocacy. A well-developed professional should open his/her self to such experiences, especially before advising others not to pursue such opportunities. My best advice for junior faculty and young investigators is to consider the word "no" advisory at best, and to follow your passion in the pursuit of new knowledge or professional service opportunities. Do so within the comfort of your timeline.

Lynne Meryl Mofenson, M.D.

Chief, Pediatric, Adolescent & Maternal AIDS Branch, Center for Research for Mothers & Children

EDUCATION

M.D.: Albert Einstein College of Medicine, 1977

B.A.: (Psychology) State University of New York, Stony Brook, 1971

RESEARCH INTERESTS

Clinical and epidemiologic research in issues related to pediatric/perinatal infectious diseases; specifically, HIV infection and HIV-associated coinfections in pregnant women, infants, children, and adolescents

PIVOTAL EVENTS

Coming to the NIH in 1989 was a pivotal experience. The environment provided by my supervisor, colleagues, and the NICHD in general allowed me to recognize my areas of expertise and where I could best make contributions. It also allowed me the flexibility to expand my activities outside of standard NIH work. My greatest rewards are providing consultation domestically and to the World Health Organization on guidelines for care and treatment of HIV-infected women and children, and seeing the effect of these guidelines on improving global public health. I feel privileged to have been accorded this unique opportunity by the NIH, and grateful to the NICHD leadership for allowing me to expand my work to include not just supporting research, but also assisting in implementing the research findings globally.

MENTORING & WORK/LIFE BALANCE

I have to give my husband full credit for my ability to balance family and career; he worked from home and was primary caregiver for our daughter from age 5 years through high school, and has been (and is) very understanding and patient with the long hours and frequent travel that my job requires. I try to ensure that the work environment in my Branch is flexible enough to allow staff time with their families and not allow work to overwhelm their lives (as I often do). I encourage my extramural staff to not just supervise but actively participate in the research we support. It is rewarding to watch the staff develop individual expertise areas and make contributions to the scientific literature and public health policy. I am very proud of the work our staff has been able to accomplish and the contributions they have made.

INSIGHTS

After medical school, I entered private pediatric and infectious diseases practice, where I saw some of the first HIV-infected patients in the early 1980s. My career then veered toward public health and in 1985, I moved to work in the Division of Infectious Disease Control in the Massachusetts Department of Public Health. There I became involved with HIV in children (along with other infectious diseases) from a public health and policy perspective. This was expanded when I joined the NICHD in 1989 and focused my work specifically on HIV infection and its treatment in women and children. It has been very rewarding to see the major public health effects on the HIV epidemic in women and children, resulting from the work of our Branch and collaborating Institutes. When I joined the NIH, there were thousands of HIV-infected infants being born in the United States each year and HIV infection in children was a death sentence. Now, new pediatric HIV infections have been nearly eliminated domestically and HIV-infected children are becoming adolescents and young adults, thanks to new treatments. The challenge now is to make these domestic achievements become a global reality. In 1994, I was selected by the NIH Director to chair the Public Health Task Force that developed guidelines on prevention of mother-to-child transmission, following the results of Pediatric AIDS Clinical Trials Group protocol 076. This provided me a model for translating research results into guidelines and effective public policy and led to my commitment to this type of translational activity in the pediatric HIV arena. Through my experiences with pediatric HIV research at NIH, I have learned that

collaborations (which are not always easy to achieve) are often the key to achieving positive results. This could be viewed as a more "female" point of view, as opposed to a more traditional "male" competitive research model, but I feel the results we have achieved show the success of this approach.

Catherine Y. Spong, M.D.

Chief, Pregnancy and Perinatology Branch, Center for Developmental Biology & Perinatal Medicine; Chief, Unit on Perinatal and Developmental Neurobiology, Division of Intramural Research

EDUCATION

Senior Staff Fellow: Laboratory of Developmental Neurobiology, NICHD, 1997–2000

Fellowship: (Maternal Fetal Medicine) NICHD and Georgetown University Medical Center, 1995–1998

Internship/Residency: (Obstetrics and Gynecology) Harbor UCLA Medical Center, 1991–1995

M.D.: (Six-Year Medical Program) University of Missouri-Kansas City, 1991

B.A.: (Biology and Chemistry) University of Missouri-Kansas City, 1991

RESEARCH INTERESTS

My research focuses on maternal and child health, emphasizing prematurity and fetal growth restriction. In addition, I am interested in the developing fetus and neuroprotective agents to prevent fetal injury. I am also the Program Scientist for the NICHD Maternal Fetal Medicine Units Network, a network of 14 sites in the United States that performs clinical trials in high-risk pregnancies.

PIVOTAL EVENTS

My parents encouraged me to enter science fairs beginning in kindergarten. They stimulated my curiosity, identifying projects appropriate for my age (growing avacado pits under different conditions, growing crystals in first grade, evaluating magnetic fields in second, and so on). They taught me how to develop a hypothesis and to realize that things did not always work out as expected.

MENTORING & WORK/LIFE BALANCE

In order to balance so many activities, including being an Extramural NICHD Branch Chief, running an intramural lab, remaining clinically active as a maternal fetal medicine specialist, being an associate Editor of *Obstetrics & Gynecology*, an Editor of three textbooks, and a wife and mother, I am fortunate to be surrounded by incredibly supportive, intelligent, and hard-working people. I owe much to those I work with, my family and parents, for it is their support that drives me and facilitates my ability to succeed. I have tried to instill in those I mentor the critical importance of believing in what you do, doing things you enjoy, and the importance of family.

INSIGHTS

I have been interested in a career in medicine as long as I can remember. I have always wanted to help people and to improve the lives of others. My career has been marked by taking advantage of unexpected opportunities and looking beyond what is typical. In medical school, one of my earliest mentors was new to the school and unexpectedly welcomed us to join his lab—an opportunity I readily accepted. I had been involved in research in high school and really enjoyed it. His constant guidance over the subsequent 5 years provided extensive experience and the introduction to national meetings where I have been presenting and attending for many years.

In choosing my specialty, I was drawn to obstetrics with the hope of being able to improve the health of mothers and children, but the clincher was that this was a field where there was the potential for pure joy. Certainly there can be sadness, but being present at the birth of a child is a gift never forgotten. In a visit to the NIH as a resident, I learned of an opportunity to pursue my maternal–fetal medicine fellowship at the NICHD and participate in cutting-edge research. Developing my skills as a basic scientist intramurally, I learned of opportunities for full-time positions at NICHD for obstetricians, something I had not realized existed.

Since joining the NICHD in 1995, and the extramural program in 2000, I have been honored to develop and identify research programs that impact how obstetrical care is given, for example, participating in trials that have identified a therapy to prevent recurrent preterm birth and in ongoing studies on stillbirth. I have learned that improving the health of women in pregnancy feeds into our ultimate goal, to improve life-long health. The ability to optimize the intrauterine environment and hence allowing the baby the best environment for development, not only improves pregnancy outcome, but also improves long-term health for the mother and child and thus the health of all with less heart disease, diabetes, and even cancer. Most importantly, I have learned that the best mechanism for success is to surround yourself with supportive and successful people. I have been blessed with incredibly supportive family

and friends and I have worked very hard to keep my family as the center of my life. For me, children are the essence of life; their presence resonates in everything I do, thus I have incorporated my children as an integral part of my professional career.

Christine Almy Bachrach, Ph.D.

Chief, Demographic & Behavioral Sciences Branch, Center for Population Research; Acting Associate Director for Behavioral & Social Sciences, NIH; Acting Director, Office of Behavioral and Social Sciences Research, Office of the Director, NIH

EDUCATION

Ph.D.: (Population Dynamics) The Johns Hopkins University School of Hygiene and Public Health, 1979

M.A.: (Sociology [Demography]) Georgetown University, 1974

B.A.: (Social Relations) Harvard University, 1972

RESEARCH INTERESTS:

Social environmental effects on health; health and development over the life course; fertility, family formation, and reproductive behaviors; social demography; dynamic processes of social change

PIVOTAL EVENTS

When I arrived at the NIH as an extramural program officer, I had to learn that I could be a scientist without doing research myself. Learning that lesson allowed me to develop a broad vision of science that discovers opportunities in the ways that scientific fields intersect and challenge one another. Several pivotal experiences facilitated my learning process. I chaired a trans-NIH conference on social and cultural dimensions of health and initiated a second on social and behavioral contributions to health disparities. I chaired the Social Environment Working Group for the National Children's Study; and joined the National Advisory Committee of the Robert Wood Johnson Foundation's (RWJF) Health and Society Scholars Program. The NIH environment has allowed me to learn constantly over the past two decades, and enabled me to contribute to an extraordinarily exciting scientific goal: integrating knowledge from biomedical, behavioral, and social scientists to improve health.

MENTORING & WORK/LIFE BALANCE

Over the years, I have mentored a steady stream of staff, interns, and fellows, maintaining relationships with quite a few. I helped to establish a mentoring program that is now formally adopted by the Population Association of America. I mentored in the NCI's "Knowledge Management" program, and as a member of the National Advisory Board of the RWJF Health and Society Scholars Program.

Having been fortunate in my own professional life, I am especially committed to helping young women negotiate their personal and professional lives. I had children immediately after completing my doctoral training. I combined part-time work (60–75 percent) with parenting for 13 rewarding years, juggling building my publication record with making Halloween costumes for my children. I have never felt I paid a price: NICHD appointed me to lead my current program 1 year after I resumed full-time work and supported me as I developed an endlessly rewarding career.

Maria L. Dufau, M.D., Ph.D.

Chief, Section on Molecular Endocrinology, Endocrinology and Reproduction Research Branch, Program in Developmental Endocrinology and Genetics, Division of Intramural Research

EDUCATION

Ph.D.: (Medical Sciences) National University of Cuyo, Mendoza, Argentina, 1968

Research Fellow: (Medicine and Pediatrics) Massachusetts General Hospital and Boston Lying-In Hospital, 1963–1967

Rockefeller Foundation Fellowship 1962–1966

Rockefeller Foundation

Biochemical Training Program: Tulane University, 1962–1963

M.D.: National University of Cuyo, Mendoza, Argentina, 1962

B.A.: (Education) Normal School, Mendoza Argentina 1955

RESEARCH INTERESTS:

Molecular basis of the hormonal control of gonadal function with emphasis on the structure and regulation of the human luteinizing hormone receptor (repression and de-repression mechanisms, epigenetics, signal transduction); multiple-promoter control of human prolactin receptor gene transcription by steroids and growth factors; elucidation of the function of

inhibitory short forms of the prolactin receptor and their relevance to physiological regulation and breast cancer; the regulatory mechanisms involved in the progress of spermatogenesis and Leydig cell function, including the identification and functional characterization of novel regulatory genes that participate in the progression of testicular gametogenesis, Leydig cell function, and other endocrine processes

PIVOTAL EVENTS

My rigorous medical training gave me a broad base for the understanding of human biology and pathology, and very early on I became interested in endocrinology. I was encouraged by two of my teachers (chairmen of physiology and medicine) to apply for a Rockefeller Foundation Fellowship, which permitted me to obtain training in clinical endocrinology in the United States and to begin a career in biomedical research. I was very fortunate to have excellent mentors throughout my training, which permitted me to rapidly develop an independent field of research. Also, from my earliest days of investigation at the NICHD, my research was well recognized and I received funding that allowed me to pursue my research goals. Furthermore, I must acknowledge the contributions of many talented postdoctoral fellows, my staff scientist, research associates, and visiting scientists who have worked in my laboratory over the years, and my collaborators to the success of my research program.

MENTORING & WORK/LIFE BALANCE

A major component of my activities has been mentoring of the many fellows from the United States and abroad who have trained in my laboratory. I have always emphasized the importance of acquiring a broad knowledge of the field, as well as specialized insights into their specific research topics. I have instilled the need for learning and performing all techniques required for the experiments, as indispensable to facilitate their future independent research. While guiding and nurturing them to perform productively, and to always follow novel approaches, I have fostered their independence. It has been very pleasing to observe them grow as successful investigators in academia, industry, and as high-level administrators of research programs.

I was able to maintain a continuous series of research accomplishments in my laboratory program while raising a son and attending to family responsibilities, with the invaluable support of my husband and other family members.

Lynnette K. Nieman, M.D.

Senior Investigator and Chief, Section on Reproductive Medicine, Program in Reproductive and Adult Endocrinology, Division of Intramural Research; Associate Director, Inter-institute Endocrinology Training Program

EDUCATION

M.D.: SUNY Buffalo, 1978

A.B.: (Molecular and Cellular Biology) Smith College, 1974

RESEARCH INTERESTS

Clinical investigation of cortisol deficiency and excess; effects of gonadal steroids on reproduction

PIVOTAL EVENTS

When I was a chief resident, one of my coworkers and I were talking about success as an academic. He very mysteriously said, "Success is very simple, just follow the three P's…" Of course, I had to know about these magical concepts. After some delaying tactics, he finally told me: Patience, Persistence, and Perseverance. While I did not feel enlightened at the time, I have come to realize the merit in this advice, and the subtle nuances between each of the "P's." Science is not a noninterrupted series of "aha" events, or wonderful discoveries, but rather, a process toward a goal. The process may be tedious and disheartening. Although they do not guarantee it, patience in the moment, long-term persistence toward the goal, and perseverance in times of adversity, all contribute to success.

MENTORING & WORK/LIFE BALANCE

It is hard to balance personal/family and professional responsibilities without worrying about the outcome of each. Apart from choosing a supportive partner, my advice is to first know and prioritize what you want—children, personal pursuits, housework, etc. Next, figure out your resources—money, time, helpers. Then think about all the solutions and buy, negotiate, or reschedule to rebalance your life. Finally, recognize that there may be times when it just isn't fun to juggle.

Sadly, mentoring is not well-rewarded in the academic world and the traits thought to characterize a successful scientist may not overlap those of a good mentor. Despite this, we all need mentoring until we retire. A mentor who is also a good friend is rare and precious. Sometimes mentoring needs can be parsed amongst many colleagues. Self-reflection about needs and creatively considering solutions (e-mail, short interviews, long-term coffee breaks) may help.

NICHD

Ida Stephens Owens, Ph.D.

Chief, Section on Genetic Disorders of Drug Metabolism, Heritable Disorders Branch, Program in Developmental Endocrinology and Genetics, Division of Intramural Research

EDUCATION

Ph.D.: (Physiology)
Duke University, 1967

B. S.: (Biology) North Carolina Central University, 1961

RESEARCH INTEREST

My research focuses on the genetics and modulation of human endoplasmic reticulum-bound detoxifying enzymes, UDP-glucuronosyltransferases (UGT), which rid the body of an unlimited number of endogenously and exogenously derived chemical toxins

PIVOTAL EVENTS

Upon completing my undergraduate studies at North Carolina Central University, I unexpectedly gained entry into the Physiology Department at Duke University Medical School by fortuitously meeting the departmental chairman (D.C. Tosteson) and was among the first two African Americans to receive a Ph.D. from that University (J. J. Blum, Ph.D. mentor). Secondly, I joined the NIH with a United States Public Health Service (USPHS) grant and completed postdoctoral work with Y.J. Topper in National Institute of Arthritis, Metabolism, and Digestive Diseases (former) (NIAMDD) followed by postdoctoral training with D.W. Nebert in NICHD with the promise of a tenure-track position. During the second postdoctoral endeavor, I sought and gained approval of my mentor to develop a program concerning the UDP-glucuronosyltransferase system. This system was in the pathway related to the interest of my mentor who focused on cytochrome P450-dependent monooxygenases. With the advent of cloning technology, I was able to carry out molecular studies that developed into a cutting-edge research program, which included the first sequencing of the novel 13-gene human *UGT1* complex locus containing the bilirubin-specific UGT gene. This enabled us to describe the first genetic defect in children afflicted with Crigler-Najjar (CN) diseases (Types I and II) and earn the NIH Director's award.

MENTORING & WORK/LIFE BALANCE

I have been a dedicated mentor since gaining tenure at NICHD, training many students starting with sustained support of a bio-aide from Howard University (S. Farquharson) in 1989, who went onto obtain a Ph.D. from Duke University. There have been more than 80 summer interns, postbaccalaureate trainees, and postdocs trained in my laboratory. Following a 1993 NIH survey that showed women scientists at NIH were treated unfairly, corrective measures were taken, including a surveillance process to prevent reversibility of this action. As NIH mandated, a senior-level female scientist, designated Women Scientists Advisor (WSA), was elected in each institute by her peers to monitor unfair treatment; I was elected WSA by women scientists in NICHD. Although I was supposed to serve for 2 years, I have been in that position since 1997, as a replacement was never identified.

With respect to family life, great support from my husband made my earlier years of balancing family responsibilities manageable. Indeed it was demanding juggling time between science and the multitude of issues surrounding the care of children. As every opportunity counted, it was very much a bonus to add-on family vacations at the end of scientific meetings, making the juggling act and the two competing responsibilities come together with an enjoyable outcome.

Keiko Ozato, Ph.D.

Chief, Section on Molecular Genetics of Immunity and Deputy Chief, Laboratory of Molecular Growth Regulation, Program in Genomics of Differentiation, Division of Intramural Research

EDUCATION

Visiting Associate: NCI,1987–1981

Research Associate:
Johns Hopkins University,
School of Medicine, 1975–1978

Postdoctoral training:
(Developmental Immunology)
Carnegie Institution
of Washington, 1973–1975

Ph.D.: (Developmental Biology)
Kyoto University, Japan, 1973

M.S.: (Science) Kyoto University, Faculty of Science, 1966

RESEARCH INTERESTS

Gene regulation in the developing immune system

PIVOTAL EVENTS

My mother, who was a traditional Japanese housewife with no scientific education, had unconditionally supported me to pursue a scientific career. This was in the face of opposition

and other obstacles. Her trust in me and in science has been the primal, lasting impetus for me to work in research. Later, I have had close scientific interactions with my husband and received consistent encouragement from him. This has been the most valuable asset I have had throughout my career.

MENTORING & WORK/LIFE BALANCE

Although our daily focus is directed toward the natural world, positive interactions with fellow scientists are important requirements for making progress in our work. Though we are not formally trained in mentoring, it seems that many of us learn to establish nurturing interactions with other laboratory workers during our research career. Early scientific education can incite interest in science in young minds that may lead to a career in science. The Summer Intern and other programs at the Institute allow us to interact with young students and are important opportunities toward this goal.

With respect to the family–career balance, we have witnessed a historical shift in emphasis for women scientists during our own time. Now we are no longer looked upon critically if we choose to work late into the night in the laboratory when we have a family at home.

Tracey A. Rouault, M.D.

Chief, Section on Human Iron Metabolism and Head, Molecular Medicine Program, Division of Intramural Research

EDUCATION

M.D.: Duke University Medical School, 1977

B.S.: (Biology) Yale College, 1973

RESEARCH INTERESTS

I am interested in understanding how humans regulate iron metabolism to ensure that there is sufficient iron to support the function of cellular enzymes, while avoiding problems of toxicity caused by iron overload. Individual cells and tissues regulate uptake and sequestration of iron in the cytosol, and in mitochondria, the main engines of cellular metabolism. Our work has demonstrated that iron regulatory protein 2 is the main regulator of mammalian cytosolic iron homeostasis. Mice that lack iron regulatory protein 2 develop microcytic anemia, erythropoietic protoporphyria, and adult-onset neurodegeneration. We are studying our mouse model to better understand early mechanisms of neurodegenerative disease. In addition, we are interested in mitochondrial iron homeostasis, and we are studying how disruption of mitochondrial iron-sulfur cluster assembly leads to the human neurodegenerative disease, Friedreich ataxia.

PIVOTAL EVENTS

When I was a student at Duke Medical School, I had the opportunity to work in a medical research laboratory during my third year of studies. I completed a project that involved using electron microscopy to evaluate red cell membrane lesions in patients with a rare type of hemolytic anemia. My work led to writing and publication of an article in the journal, Blood. I experienced the satisfaction of answering a research question and summarizing the results of my work in a research article. The success of this small project was important in the development of my career, because I had the opportunity to present my results at a symposium and to write a scientific paper, and I realized that research could be rewarding and exciting.

MENTORING & WORK/LIFE BALANCE

My two children were born before I started my research fellowship at the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development. I found that research was compatible with my responsibilities at home because I could plan experiments and organize my life. Despite the possibility of working regular hours during my early years in research, I frequently had to stay late or work at night to complete experiments. Fortunately, we were able to hire several wonderful women from South America who lived in our house during the week. We sponsored one of these women for U.S. citizenship, and we have remained close with her family for many years. As a result, both of my daughters speak excellent Spanish, a great extra benefit of our child-care arrangements. As a mentor of young scientists, I try to be as flexible as possible, because I think that people work best when they feel that they control their own destinies.

NICHD

Gisela Storz, Ph.D.

Senior Investigator and Chief, Section on Environmental Gene Regulation, Cell Biology, and Metabolism Program, Division of Intramural Research

EDUCATION

Ph.D.: (Biochemistry)
University of California,
Berkeley 1988

B.A.: (Biochemistry)
University of Colorado,
Boulder, 1984

RESEARCH INTERESTS

Cellular defenses against oxidative stress, identification and characterization of noncoding RNAs, identification and characterization of small, unannotated proteins

PIVOTAL EVENTS

The continuing support, encouragement, and advice of several individuals, both mentors and colleagues, as well as my husband, have been critical throughout my career.

MENTORING & WORK/LIFE BALANCE

I think mentoring students and postdoctoral fellows is one of the biggest joys in my profession. It is a great pleasure for me to follow the careers of former lab members and to hear of their successes.

For me, having three children has provided a good counterbalance to the rigors of leading a research group and fulfilling other professional responsibilities. It is sometimes a challenge to accommodate the demands of both work and family while retaining time for myself, but I feel fortunate to have a very interesting and fulfilling life.

Marian Willinger, Ph.D.

Special Assistant for Sudden Infant Death Syndrome, Pregnancy & Perinatology Branch, Center for Developmental Biology & Perinatal Medicine

EDUCATION

NRSA Postdoctoral Fellowship: (Neuropathology), Harvard Medical School, 1976–1979

Ph.D.: (Microbiology),
University of Pennsylvania, 1976

B.A.: (Biology)
SUNY Binghamton, 1970

RESEARCH INTERESTS

Sudden Infant Death Syndrome (SIDS), stillbirth, adverse pregnancy and infant outcome, health disparities

PIVOTAL EVENTS

My graduate and postdoctoral training were of the highest quality and are the foundation for my achievements. When I was junior faculty, I realized I wanted a future as a member of a team to improve public health rather than being a bench scientist. I spent a year interviewing with Federal agencies, think tanks, and science journalists trying to find the right fit. I joined the early years of the NIAID effort to combat AIDS. Quickly, I learned how the government tackles a public health threat. My passion is maternal and child health and an opportunity became available to expand the SIDS program at NICHD. Soon after, the international community was mobilizing with new knowledge to reduce SIDS risk. I forged fruitful collaborations and learned new disciplines. I became part of a powerful team, which was successful in reducing SIDS deaths by half.

MENTORING & WORK/LIFE BALANCE

My thesis advisor taught me to think objectively, critically, and creatively about scientific questions. I try to impart these values when mentoring. Also, I try to support young people in their career search. The willingness of senior professionals to give me their time was vital to my search.

It took vigilance and staying focused on my personal priorities when balancing family and professional responsibilities. I wanted the peace of mind that I was doing the best that I could for my family, so support systems were very important. As a baby, my son had a wonderful daycare provider. My parents also helped and good schools were essential. The NICHD leadership at all levels share my value of family, and value my contributions. Their support has enabled me to achieve a healthy balance and accomplish my personal and professional goals.

Anne D. Willoughby, M.D.

Director, Center for Research for Mothers & Children (Former)

EDUCATION

USPHS Epidemiology Fellowship: NIH, 1984–1986

M.P.H.: (Epidemiology)
University of California – Berkley, 1983–1984

Robert Wood Johnson General Academic Fellowship:
Stanford University, 1981–1983

M.D.: Cornell University Medical College, 1978

A.B.: (Psychology) Bryn Mawr College, 1973

RESEARCH INTERESTS

Maternal and child health, pediatric and maternal HIV/AIDS, global health

PIVOTAL EVENTS

I believe that my work at NIH has been a stimulus to my growth as a scientist. Through talking with scientists all over the United States and abroad, attending professional meetings, making site visits to many excellent medical academic centers, and even the routine process of reading grant applications and attending study sections, I have had an opportunity to see the superb science funded by NIH be initiated and come to fruition. I always say that attending study section is listening to the smartest people in the world talk about the nascent work of the smartest people in the world. The growth made possible by working at NIH is unparalleled in the entire world and I am lucky to be a part of it.

MENTORING & WORK/LIFE BALANCE

One of the finest mentors in the world is Dr. Wendy Baldwin, who was branch chief of the Demographic and Behavioral Sciences Branch in NICHD. Wendy later became the Deputy Director of NICHD and then Deputy Director of the NIH. She was a mentor extraordinaire because she saw every moment with me as a teachable moment. She always wanted me to know more than I already did and would show me the ropes if I would stand still for 15 seconds. She appointed people to committees who were a "reach" for them—and they succeeded, to their surprise but not Wendy's. She made it all look easy and full of joy and purpose.

I was pregnant with my first child when I interviewed at NIH. He is now a second-year medical student. I guess that means that I somehow balanced life and work well. I think the key (and the only key) is to work incredibly hard and face the fact that you are going to be exhausted much of the time. You can't complain about the exhaustion because it is the price you pay for what you have. You know you made a choice and you aren't entitled to be anything but grateful that you have choices.

Karen K. Winer, M.D.

Medical Officer, Endocrinology, Nutrition & Growth Branch, Center for Research for Mothers & Children

EDUCATION

M.D.: Sackler School
of Medicine 1984

B.A.: (Music History and Theory)
Boston University, 1974

RESEARCH INTERESTS

Disorders of growth and sexual maturation, osteoporosis prevention, bone growth and accrual in childhood, type 1 diabetes, calcium metabolism, and hypoparathyroidism.

PIVOTAL EVENTS

The training I received during my fellowship years at the NICHD represents a pivotal experience. The unique environment at the NIH helped pave the way for my initiation of several important intramural and extramural projects. First, my study to develop an effective treatment for hypoparathyroidism with the missing hormone, parathyroid hormone, has markedly improved the quality of life of my patients and a new wealth of research spawned from my findings has been enormously gratifying. Second, the multicenter Bone Mineral Density in Childhood Study (BMDCS), a 6-year study of bone growth, provides unique longitudinal bone density measures, bone age, sexual maturation, and anthropometric data for 2,000 children ages 5–18. The study has opened the door for further investigations in disorders of skeletal growth and maturation that often accompany chronic illness in childhood. Third, my involvement with the successful multicenter Diabetes Research in Children's Network (DirecNet), a group of five centers that are working together to develop and test noninvasive ways to monitor children with type 1 diabetes with the ultimate goal of "closing the loop" between automatic glucose level measurements and appropriate insulin delivery responses.

MENTORING & WORK/LIFE BALANCE

Balancing family with professional responsibilities has been challenging, but the experiences and satisfaction I derive from each has given me tools that have been invaluable in succeeding in the other. The boundless curiosity of my children and their ability each day to see the world new born and their keen eye for the human condition created an important

model for me as I pursued my research. The nurturing skills I developed as a mother have made me more effective in the way I care for my protocol patients and far more determined to improve their lives.

An essential part of my work as a program administrator is to provide guidance to investigators. I communicate with investigators and speak with them at professional meetings to discuss their research ideas, difficulties with navigating the NIH review system, and funding opportunities at the NICHD. Since 1999, I have been program director for K12–Child Health Career Development Award Program. This program provides training and research funds for young investigators, giving them opportunities to develop their research skills that would, in the absence of this program, be unavailable to them. Over the past 17 years, 550 junior investigators have received training through this program.

National Institute on Deafness and Other Communication Disorders

Judith A. Cooper, Ph.D.

Deputy Director; Director, Division of Scientific Programs

EDUCATION

Ph.D.: (Speech and Hearing Sciences) University of Washington, 1982

M.S.: (Speech and Hearing Sciences) Vanderbilt University, 1972

B.F.A.: (Speech Pathology) Southern Methodist University, 1971

RESEARCH INTERESTS

Language and autism, language disorders in children, adult aphasia, language and deafness

PIVOTAL EVENTS

I strongly believe my success as a scientist is directly related to pivotal "environments" and individuals I encountered at critical points in my career. These include 1) Prior to NIH, several key colleagues and professors who encouraged me to look beyond a career in clinical practice and to pursue a doctoral degree in communication sciences and disorders, 2) Once at NIH, a division director who fostered my independence and supported pursuit of my scientific interests, and 3) The overall NIH environment, and its associated opportunities. In this environment, where I have spent almost my entire professional career, I have been able to develop and facilitate programs in areas such as linguistic-cultural diversity; language and autism; specific-language impairment; and treatment of adult aphasia, providing me with a fulfilling, ever-interesting, and rewarding career. Success for me has always been strongly linked to job satisfaction and believing in the value of what I do.

MENTORING & WORK/LIFE BALANCE

My opportunities for mentoring have primarily involved assisting, advising, and advocating for the research community, and supporting and fostering development of staff within my division. Working with beginning and seasoned investigators, helping them navigate the NIH system and often reach the funding goal, has been very rewarding to me. This interpersonal interaction and providing assistance is extremely important to me regarding job satisfaction and what I have always wanted in my career, i.e., to help make a difference in the lives of individuals with communication disorders.

NIDCD

With two sons and an NIH spouse, I have had experience with balancing family and professional responsibilities. Success for me was largely due to having a spouse who believed in egalitarian sharing of family tasks, and viewed our professional responsibilities equally. In addition, having a supportive work environment that allowed flexibility and self-directing of work/schedule was critical. These supports are critical to success in the balancing act.

Amy M. Donahue, Ph.D.

Chief, Hearing and Balance/Vestibular Sciences Branch, Division of Scientific Programs

EDUCATION

Ph.D.: (Speech and Hearing Science) University of Tennessee, Knoxville, 1985

M.A.: (Audiology) University of Tennessee, Knoxville, 1979

B.S.: (Speech and Hearing) Middle Tennessee State University, 1978

RESEARCH INTERESTS

Normal and disordered bases of hearing, including noise-induced hearing loss, presbycusis and cochlear implants; science administration

PIVOTAL EVENTS

My success as a scientist is the result of a combination of hard work and good fortune. I met individuals who encouraged me to believe in myself and who were willing to provide opportunities to learn and grow. Four individuals (the father of a friend, an academic professor/advisor, a research mentor, and a division chief) were instrumental in helping me envision and create my career in science. Beyond the "people" aspect, my desire to seek a career in science outside the traditional academic career path, provided the basis and setting for numerous experiences, challenges, and opportunities more diverse than I ever imagined and surely different from those of a traditional academic career path.

MENTORING & WORK/LIFE BALANCE

The role and value of mentoring in shaping my career is without question and it is certain that my career would have been different without mentoring. In turn, it is now my responsibility to mentor others. Any professional woman who fully engages her capacity to connect with others will struggle with balancing family and professional responsibilities. While each of us may have a different family "unit," whether balancing care for parent, child, husband, sibling, or other loved one, the balancing challenges are similar. Working in an environment that recognizes the personal dimensions of its employees has been invaluable in helping me balance my personal and professional responsibilities.

National Institute of Dental and Craniofacial Research

A. Isabel Garcia, D.D.S.

Deputy Director

EDUCATION

Residency: (Dental Public Health) University of Michigan, 1989

M.P.H.: University of Michigan, 1988

D.D.S.: Medical College of Virginia, Virginia Commonwealth University, 1980

B.S.: (Chemistry) University of Mary Washington, 1976

RESEARCH INTERESTS

Health policy and legislation, health disparities, organization and financing of care, oral/pharyngeal cancer outcomes

PIVOTAL EVENTS

My career would have taken a totally different path without the influence of several people who widened my professional outlook and gave me new and unexpected job opportunities. Former Virginia oral health director, Dr. Joe Doherty, gave me my first dental public health job, where I first experienced the satisfaction of providing care to people in great need as well as the frustration of not being able to address their problems more thoroughly. That job helped me realize that public health and science are the means to better health for communities. It also made me appreciate that I needed to return to school for formal public health training. Dr. Brian Burt and colleagues at the University of Michigan taught me the basics of scientific inquiry, epidemiology, and public health, which formed the foundation of my subsequent career in the U.S. Public Health Service (USPHS). Dr. Dushanka Kleinman recruited me to NIDCR and gave me the chance to integrate dentistry and public health in a research environment, and Dr. Larry Tabak challenged me to jump out of my comfort zone and continues to teach me by example many lessons about leadership and professionalism. Of important note is my husband, mentor, and public health colleague, Dr. Ric Bothwell, whose unwavering support has allowed me to take on positions of greater responsibility over the years.

MENTORING & WORK/LIFE BALANCE

I have benefited from the counsel and guidance of many mentors before, during, and after my professional training. My parents set an exceptional example of hard work, integrity, and perseverance in the face of many challenges. After coming to the United States from Cuba in the early 1970s, they were undeterred by the typical barriers faced by new immigrants and made sure that I didn't lose sight of the importance of getting

an education and setting high career goals. Besides the professional mentors already mentioned, other mentors have been ordinary people without professional degrees or credentials, who learned in unconventional ways and shared selflessly their knowledge and experiences with me. I am fortunate to have worked over the years with supportive colleagues and supervisors, who make the sometimes precarious balancing act between home and work much easier. The support and flexibility of my husband and my family has enabled me to have a fulfilling work life that benefits from the perspective that only spouses and children can offer.

Indu S. Ambudkar, Ph.D.

Chief, Secretory Physiology Section and Chief, Molecular Physiology and Therapeutics Branch, Division of Intramural Research

EDUCATION

Ph.D.: (Biochemistry) Madurai Kamaraj University, Madurai, India, 1980

M.Sc.: (Biochemistry) Lucknow University, Lucknow, India, 1975

B.Sc.: (Biology) Isabella Thoburn College, Lucknow, India, 1973

RESEARCH INTERESTS

Molecular composition, function, regulation, and assembly of Ca2+ entry channels in epithelial cells; role of calcium signaling in salivary gland function and disease

PIVOTAL EVENTS

I moved to the United States as a postdoctoral fellow after obtaining my Ph.D. in India. Until that point, although I was a good student and enjoyed working in the laboratory, I was not very serious about pursuing a career in science. In fact, I came to the United States because my husband had a position and wanted to move to this country. However, once I got here, I became aware of the vast opportunities that were available to me and realized the only burden on me was to learn as much as I could and work hard. I continued to work on Ca2+ signaling, which was also the topic of my Ph.D. thesis, learning different aspects and systems within this field and also adapting newer technologies as they evolved. So, I guess for me 1) realization that I actually enjoyed research, and 2) acceptance of the fact that ultimately what I do will determine my "success," or lack of it, was the turning point in my career as a scientist.

MENTORING & WORK/LIFE BALANCE

I enjoy teaching and interacting with young scientists. My basic approach is to treat my fellows and students as colleagues. I remind myself, and them, that the reason they are in my laboratory is so that they can further their careers as scientists. My responsibility is to provide an environment that encourages them to think and be creative and help them ask the right questions and focus on experiments that will lead to answers. Their responsibility is to learn and work toward their goal. I have found that motivation and focus leads to good work and happy colleagues in the laboratory.

I never, ever contemplated on the issue of balancing family life and career. My husband and I always assumed that I would do both and neither of us felt that they were mutually exclusive. I have a son who is 23; he graduated from college and has a career. Things did get quite tough every now and then, especially earlier on, with scheduling time, day care, fevers, earaches, etc. At work, I learned to be focused and goal-oriented, finishing tasks I had planned for each day. My husband, who is very supportive of my work, contributed equally to our son's care and household chores. We organized and planned things in advance and got them done. I think my son has grown up to be a happy, well-adjusted young man and our scientific careers have not suffered. My advice to young women scientists, if you really want a career, be positive about it and focus on what you can do to make it work.

INSIGHTS

An important aspect of being a successful scientist is networking, i.e., getting to know not only your peers, but also the leading scientists in your field. A lot of this "socializing" happens at meetings and conferences. In the absence of a "mentor" to introduce me to everyone, I was left with the option of doing this by myself. This can be intimidating for any young person, but especially so for a women who grew up outside the United States. I realized in the beginning that 1) there were extremely few women in my field of work, and 2) the "guys" did a lot of socializing during which they discussed science and other important happenings in the field. Initially, I stayed away from this because I was intimidated by them. Also, the few times when I tried to talk to them, I felt they were rather reserved with me. Due to my cultural background, people had a tendency to assume that I would be very conservative and they were not quite sure how to interact with me. So, you see they were a bit nervous, too. Anyway, I soon realized that it was necessary for me to overcome my hesitancy and get to know the people in my field and let them get to know me. So, that's what I did. Perseverance, an open mind, and a sense of humor finally paid off. Now they consider me one of the "guys." I guess I should take that as a compliment!

Lynne M. Angerer, Ph.D.

Senior Scientist, Developmental Mechanisms Unit, Division of Intramural Research

EDUCATION

Postdoctoral Fellow: (Chemistry) California Institute of Technology, 1973–1977

Ph.D.: (Biology) The Johns Hopkins University, 1973

M.Sc.: (Zoology and Entomology) The Ohio State University, 1967

B.Sc.: (Zoology) The Ohio State University, 1966

RESEARCH INTERESTS

Mechanisms of cell fate specification in early development; gene regulatory networks controlling specification of neural precursors

PIVOTAL EVENTS

Five people, all men, made entirely different, yet profound contributions to my success as a scientist. These were 1) my father, who told me that I could reach any goal with enough effort, 2) a college professor, who taught me how experimentation solved problems in biology, 3) my husband, who encouraged me not only to go to graduate school but to face all the challenges of a career in science, 4) my graduate advisor, who showed by his actions how not to interact with others in science and forced me to stand up for myself, and 5) my postdoctoral advisor, who taught me how to think quantitatively and dissect a problem cleanly into its essential elements.

MENTORING & WORK/LIFE BALANCE

During the past 30 years, Bob Angerer and I have trained 12 Ph.D. students and 9 postdocs. I have also served on the thesis advisory committees of many other students and organized journal clubs where I trained people in effective presentation methods. Because my positions have allowed me to devote all my time to research, I discussed science and career planning with all these people on a frequent basis. I was able to balance the demands of my career with raising two children because my husband was actively involved with both endeavors.

INSIGHTS

Perhaps my most useful scientific achievement was the work I did to develop in situ hybridization methods for detecting mRNAs in cells and tissues in the early 1980s. I was the first to show that labeled RNAs, rather than DNAs, were sufficiently sensitive to detect even rare mRNAs. This led to my leading workshops and writing review articles and serving on an editorial board dealing with in situ hybridization methods. It is gratifying that the riboprobe method developed by me and others in our lab are still universally used for this important technique. More recently, I supervised a lab group that made important discoveries on patterning mechanisms in sea urchin embryos by discovering mutual antagonism between SoxB factors and canonical Wnt signaling, identifying a mechanism that coordinates cell fate specification along different developmenetal axes, finding new signals required for endoderm specification and developing the first microarrays in the sea urchin for global analysis of gene regulatory relationships.

Pamela Margaret McInnes, D.D.S.

Director, Division of Extramural Research

EDUCATION

M.Sc.: (Dentistry) University of Witwatersrand, Johannesburg, South Africa, 1980

D.D.S.: University of Witwatersrand, Johannesburg, South Africa, 1977

RESEARCH INTERESTS

I am actively involved with the NIH extramural research community in the mission of reducing the morbidity and mortality attributable to infectious diseases. I have a particular interest in vaccine development and clinical evaluation, as well as the prevention of oral and craniofacial diseases.

PIVOTAL EVENTS

As an 18-year-old dental student, I conducted my first research project on dental caries in South African mineworkers under the kind and generous tutelage of Professor Hugo Retief. That first research experience changed my life and moved me toward a career that included both clinical dental practice, research and teaching. I often look back and think how lucky I was to have wandered into the MRC Research Unit at the University of the Witwatersrand and naively ask, "What is research about?"

MENTORING & WORK/LIFE BALANCE

In dental school in South Africa, I was one of three female dental students. Later, I was on faculty at Louisiana State University (LSU) School of Dentistry where there were only four women permanent faculty members at the time. Female mentors per se were certainly not plentiful in my early career.

Instead I was mentored by several wonderful male clinicians and scientists and I think that helped me enormously. I strove to do what they did in terms of productivity and contributions. Admittedly this was stressful at times, but I never considered doing it any other way. When I joined the NIH extramural program in 1989, I had the extraordinary good fortune of working with Dr. Carole Heilman in NIAID. In the work environment she created, I was able to balance family and professional responsibilities, working very hard, but also having fun and keeping my family well-nourished, educated, clean, and happy!

INSIGHTS

A watershed event in my career was being accepted into the NIH Grants Associates Program in 1989. I spent a year learning about the Federal biomedical research enterprise, rotating through a variety of program, review, policy, and budget assignments. Needless to say, I loved the whole NIH experience! I joined NIAID in 1990 and was privileged to work in the extramural program managing an infectious diseases research program for the next 16 years. There, I was afforded extraordinary opportunities to learn infectious diseases, vaccine development, and clinical evaluation, and along with many other scientists and administrators, I share pride in the development and licensure of several pediatric vaccines. In 2006, I returned to my "dental beginnings" and now direct an extramural research program in NIDCR. In my group, I try to provide the same environment I was privileged to experience under Carole Heilman, and to foster scientists from varied backgrounds to be successful both professionally and personally.

Pamela Gehron Robey, Ph.D.

Chief, Craniofacial and Skeletal Diseases Branch, Division of Intramural Research

EDUCATION

Ph.D.: (Cell Biology) Catholic University of America, Washington, DC, 1979

M.S.: (Biochemistry) Catholic University of America, Washington, DC, 1977

B.A.: (Biology) Susquehanna University, 1974

RESEARCH INTERESTS

Stem cell biology, skeletal biology, skeletal diseases, tissue engineering

PIVOTAL EVENTS

Most likely, moving to NIDCR in 1982 was the pivotal event in my career. I was given the opportunity to establish my own program in bone cell biology. At the time, I did not know much about bone, and followed my intuitions and relied on my graduate and postdoctoral training to establish a method for culturing normal, nontransformed osteogenic cells that faithfully recapitulate stages of maturation that are assessable in vitro. This provided the necessary tool to my collaborators to isolate clones and genes for all of the major structural proteins in bone. In addition, I had the opportunity to recruit Alexander J. Friedenstein, the father of "mesenchymal" stem cell biology for a sabbatical. He opened my eyes to the field of stem cell biology—the focus of my current studies—and the role of stem cells on health and disease, and their utility in regenerative medicine.

MENTORING & WORK/LIFE BALANCE

I was very fortunate to have two great mentors. George R. Martin taught me how to question and think, how to conduct rigorous research, and how to project myself as a scientist. John D. Termine impressed upon me the importance of family, and trusted me to accomplish my goals by working from home or during off hours when necessary. A key part of his mentoring was in helping me to recognize that it is not possible to be everything to everyone all the time, and that setting priorities both at home and at work is essential. He created a family atmosphere in the laboratory that really brought out the best in people. All of these elements are things that I strive to maintain in my laboratory and branch, and I believe that these things have contributed significantly to my branch's success over the years.

INSIGHTS

The methods that I have developed over the years for not only establishing osteogenic cells and populations containing stem cells, but also for in vivo transplantation, are now used worldwide, and have become the gold standard by which to assess osteogenic processes and multipotency of populations containing stem cells. Based on my expertise in these areas, I have often been invited to contribute chapters to textbooks, and to give oral presentations to groups with a broad array of scientific backgrounds, and to legislators and the lay public. What I learned early on, in fact from my children and in talking to their schoolmates, is the need to speak in simple terms. I am a firm believer that nothing that we do as scientists is so complicated that it cannot be well explained in language that is understandable by all. In fact, I believe that communication is one of our major responsibilities, not only to fellow scientists, but also to the public. The ability to communicate is something that has contributed significantly to success in my career.

Sharon Marie Knudson Wahl, Ph.D.

Chief, Cellular Immunology Section and
Chief, Oral Infection and Immunity Branch,
Division of Intramural Research

EDUCATION

Ph.D.: (Immunology)
University of Washington
School of Medicine

B.S.: (Biology) Pacific
Lutheran University

RESEARCH INTERESTS

Basic mechanisms by which the host mobilizes and modulates cellular inflammatory reactions in defense against foreign antigens and infectious pathogens, innovative ways to define how endogenous mediators that are critical in host defense may become disregulated to promote disease, and development of strategies for modulating chronic pathogenic inflammatory diseases. In a bench-to-bedside approach, inroads have been made into malignant, infectious, and autoimmune diseases.

PIVOTAL EVENTS

As the first in my family to attend college, I was fascinated by science classes, and labs were so much fun that I kept signing up for more. One of my biology teachers turned me onto scientific exploration, and with the realization that a woman with a B.S. in biology had few career options, he encouraged me to continue my education. While my intention was to finish an M.S., and I had lined up an instructor position, a classmate convinced me to take Ph.D. qualifying exams, reasoning that if I failed, I had lost nothing (except my self-respect) and if I passed, I could continue toward my Ph.D. In retrospect, that was a defining moment, and after completing my Ph.D., a brief postdoc while waiting for my then to-be-husband to finish his Ph.D. initiated my interest in inflammation. After he secured a postdoc at NIH, we pulled a U-haul across country to Maryland, where we had little money and I had no position until a fellowship opened up with Dr. J. Oppenheim. Following our 2-year fellowships, we began interviewing for junior faculty positions at medical schools. Unexpectedly, my Lab Chief asked me to stay, not something we had considered, as it seemed inconceivable to get paid for doing research full-time. However, as I progressed from being a fellow to staff scientist, then tenured microbiologist, section chief, and branch chief, I realized that it was possible to get paid for doing what you love!

MENTORING & WORK/LIFE BALANCE

Career highlights include the satisfaction in knowing that I have had some small impact on my students' and fellows' professional and personal development. There is incredible satisfaction in observing students become driven by the excitement of their experiments, recognize that completion of one experiment is not an end unto itself, and appreciate the goal of new therapeutic insights. One especially rewarding experience was the surprise celebration of an unnamed birthday, in the planning stages for more than a year unbeknownst to me, in which my former fellows gathered from all over the world for a weekend of science and celebration.

Although having children was never in question, when to have a baby was the more difficult decision, and following our opportunity to stay at NIH, my husband and I decided to start a family. Although reliable day care was difficult in those days, we did our best to develop our own approaches to combining roles of scientist and parent. Since my husband and I did not travel together without our children, we took them to meetings around the world and those experiences inspired a life-long appreciation for travel and other cultures. As teenagers, both worked in my lab and are my published co-authors, instilling a shared love of science, although neither wanted science careers. However, much to our delight, both our son and daughter are recent medical school graduates, and we have been incredibly blessed and enriched by our children.

INSIGHTS

Growing up on a small farm in the Pacific Northwest, where my strict disciplinarian father taught me the meaning of hard work, I never could have imagined, let alone planned, the paths through which my life has taken me. Looking back, I think one of the most important aspects of my career has been the receptiveness to take advantage of unplanned opportunities that appeared in front of me. For example, I would not have gone to graduate school without the prodding of one of my biology professors, nor continued onto get my Ph.D. without arm-twisting by a graduate school colleague. When ready to leave NIH, an unexpected option to stay appeared, and later, when I again knew I was ready for change, the opportunity to be Section Chief was offered, and then, the Branch Chief. Change is important in our careers to prevent complacency and to enable advancement, but change may appear in unexpected ways, and we need to be open to it.

Looking backward, my career has evolved in such a way as to provide professional fulfillment combined with successful parenting, in which I take great pride. The commitment is enormous, compromise is essential, and the inherent difficulties in combining the two roles are clearly not for the faint-hearted. It would be dishonest to say it was always easy, but that is not to say that it was not worth every sacrifice and concession.

NIDCR

Jane C. Atkinson, D.D.S.

Program Director, Clinical Trials Program, Center for Clinical Research, Division of Extramural Research

EDUCATION

Certificate: (Oral Medicine/Clinical Research) National Institute of Dental Research, 1988

Residency: (General Practice) University of Maryland Hospital, Baltimore, Maryland, 1981–1982

D.D.S.: University of Missouri-Kansas City, 1981

B.S.: (Medical Technology) University of Kansas, 1975

RESEARCH INTERESTS

Clinical trials, Sjögren's syndrome, oral graft-versus-host disease

PIVOTAL EVENTS

My experience as an Oral Medicine/Clinical Research staff fellow in the Intramural Program of the National Institute of Dental and Craniofacial Research was the most pivotal event in my research career. It exposed me to multidisciplinary, clinical research and gave me an appreciation for translational, bench to bedside clinical investigations. During my training and later in my career in the intramural program at NIH, I had collaborative research projects with experts in rheumatology, infectious diseases, cancer research, and imaging. There are very few places in the world that can provide this type of experience to a clinical investigator, especially one with a dental degree.

MENTORING & WORK/LIFE BALANCE

After 22 years in research, I appreciate how much I owe my previous mentors, especially Bruce J. Baum. I only hope I can provide similar guidance to young investigators in oral health research. One piece of advice I have for any new researcher is to consider their career with a long view and not to let their career compromise their family time. When I started my training at NIH, my son was 2 years old, my daughter was 4 months old, and my husband traveled extensively as a journalist. I limited my professional travel and postdoctoral education when our children were young, choosing research projects that fit my children's daycare schedule and calculating data at home. However, I do not feel these time constraints compromised my career. Now my children are in graduate school, and I have another 10 years to work in a field that still challenges me.

Sangeeta Bhargava, Ph.D.

Program Director, Immunology and Immunotherapy Program, Integrative Biology and Infectious Diseases Branch, Division of Extramural Research (Former); Assistant Director, Division of Receipt and Referral, Center for Scientific Review

EDUCATION

Postdoctoral Fellowship: (Mucosal Immunology) University of Pennsylvania, 1994–1999

Ph.D.: (Reproductive Biology) AIIMS, New Delhi, India, 1994

M.Sc.: (Life Sciences) Jawahar Lal Nehru University, New Delhi, India, 1989

B.Sc.: (Zoology) Delhi University, Delhi, India, 1987

RESEARCH INTERESTS

Mucosal immunology; immunology

PIVOTAL EVENTS

I was raised in a family with a father who was a cardiologist and a stay-at-home mother. My mother wanted me to be a school teacher so that I would have a half-day job and the rest of the day would be devoted to my family, whereas my father wanted me to be a medical doctor. Both my parents assumed that I would follow one of their footsteps. Neither imagined exactly how I would carve my own niche and be the first one to obtain a Ph.D. and be a scientist in my family.

My parents always stressed the importance of education. I was determined to prove to myself and my parents that I could have a profession that excited me rather than doing what I was told to do. I pursued my dream and surprised my parents by informing them that I did not want to do medicine. I joined the top science college in India for zoology, which turned out not to excite me at all. I gave myself another chance and went through a national entrance exam for my master's degree. In my master's program, I was fortunate enough to find a teacher who turned me to the field of immunology and I never let it go. I realized while studying immunology that I needed to understand how metabolic pathways influence the immune system. I did my Ph.D. in reproductive biology in the field of steroid biochemistry. What really fascinated me while doing my Ph.D. was the freedom my advisor gave me to think about what excited me the most at that time, so much that he let me choose my own Ph.D. topic and pursue research in it.

I was fortunate to do my postdoctoral work in mucosal immunology in the laboratory of John Cebra at University of Pennsylvania. His laboratory in many respects was a scientific paradise where one had the freedom to ask questions and pursue them. It was in his laboratory that I designed an oral vaccine for neonates, which can bypass suckled neutralizing antibody that inhibit active immunization and also found that this vaccine can be cross protective for other mucosal sites in neonates. I was able to show the cross priming mechanisms that are associated with viral infection at various mucosal sites. I realized as a postdoctoral fellow that I wanted to pursue the applied and translational aspect of mucosal immunology and thus to my postdoctoral mentor's surprise, I went into the private sector. I worked on many kinds of vaccines as a lab scientist in the private sector, but I missed the challenge of moving a scientific field in a particular direction and interacting with people.

I joined NIDCR at the end of 2003 as Program Director of the Immunology and Immunotherapy Program. My work suits me perfectly because I am always learning new things. I enjoy this job for the variety and the challenges it entails.

MENTORING & WORK/LIFE BALANCE

Both my husband and I are scientists and we have two children (ages 11 and 6). It is demanding to balance family with professional responsibility and I have a lot of support and help from my husband, which has been instrumental in balancing family and career. When I am not at work, I spend time with my family. The key in my opinion for successfully combining a career and family life is compartmentalizing the two. I try not to bring my work home and so my energy is concentrated with the family. I am active with my children in the schools' activities, Parent–Teacher Association (PTA), and their extracurricular activities.

From my experience so far, I would give the same advice to any young person as I give to my kids: to be open-minded and to learn as many things as possible before you decide what you want to do. More importantly, don't let anyone push you into a field that you don't like, as you have to find your own path. I believe that if one has a strong intellectual background, one can do anything.

Kathy Lynn Hayes, D.M.D.

Acting Director, Office of Science Policy and Analysis, Office of the Director

EDUCATION

Residency: (Dental Public Health), NIDCR, 2003

M.P.H.: (Public Health Administration)
The Johns Hopkins University, 1999

Residency: (Advanced General Practice)
University of North Carolina, 1991

D.M.D.: University of Kentucky College of Dentistry, 1986

B. S.: (Biology) University of Kentucky College of Arts and Sciences, 1982

RESEARCH INTERESTS

Dental public health, including epidemiologic research, health services research, disparities research

PIVOTAL EVENTS

The opportunity to participate in and present results of ongoing research was offered as an elective course in the dental curriculum at my alma mater. The experience helped foster an understanding and abiding respect for the diligence required of scientific investigators of all disciplines. The ability to work in varied assignments across multiple health agencies as a member of the U.S. Public Health Service has had a significant beneficial effect in that it provided an opportunity to develop a broad understanding of the inter-related missions of the agencies and their combined effect on health policy, including health-related basic, translational, and clinical research. Finally, postdoctoral training here at the NIH in 2002/2003 was an incredibly enriching experience that opened up a world of opportunities that might not have been otherwise available.

MENTORING & WORK/LIFE BALANCE

Some of the best mentors were those who offered a supportive environment where one not only received an opportunity to take on new responsibilities, but also felt comfortable enough to take some chances and make some mistakes. It seems clear that we must consciously expand our mentoring efforts to encourage young women's interest in science at much earlier ages. By the time they are thinking about college, the die is cast, and it may be too late.

Maintaining a well-rounded personality and lifestyle to meet professional, family, and personal needs is a challenge for everyone. I feel especially blessed to have a spouse who is a full

partner in all aspects of family and professional life. Things may be a bit easier for us than they were for our mothers and grandmothers, in that parenting and household duties often are more equitably shared today than in their generations.

Eleni Kousvelari, D.D.S., D.Sc.

Associate Director for Biotechnology and Innovation, Office of Extramural Research (Former)

EDUCATION

D.Sc.: (Oral Biology)
Boston University, School of Graduate Dentistry, 1977

M.Sc./ C.A.G.S.P.: (Prosthodontic) Boston University School of Graduate Dentistry, 1976

D.D.S.: Athens University, Medical and Dental School, Athens, Greece, 1968

RESEARCH INTERESTS

Biotechnology

PIVOTAL EVENTS

The event that had a tremendous impact on my career as a scientist was my decision to join the extramural programs at the NIDCR. This career move allowed me to bridge my expertise in biological and material science. I was fortunate to join the NIDCR at a pivotal time when the NIH was establishing programs in bioengineering, nanotechnology, and biocomputing. The knowledge and expertise acquired through my studies and work in dentistry, material sciences, and biochemistry has been a great asset in building multidisciplinary/interdisciplinary programs in biotechnology for the NIDCR and for actively participating in similar activities across the NIH. The tremendous support from the NIDCR leadership allowed me to create state-of-the art programs including 1) saliva-based diagnostic technologies, 2) nanotechnology, and 3) biomimetics. Saliva-based technologies, once developed, will replace current disease detection methodologies with miniaturized, automated, inexpensive, and efficient technologies that can yield results in as little as 10 minutes, while nanotechnology and biomimetics will enable the design and development of materials, devices, and drugs that are compatible with the biological environment and at the same time are tailored to combat specific disease in specific tissues and organs.

I would also like to mention the extraordinary relationships/networks I have developed with exceptional colleagues because of my membership in trans-NIH/Roadmap initiatives, e.g., nanotechnology, nanomedicine, and committees, e.g., Bioengineering Consortium (BECON), Biomedical Information Science and Technology Initiative (BISTI), the NIH Nano Task Force and in multi-Agency Committees such as the Nanoscale Science, Engineering, and Technology.

MENTORING & WORK/LIFE BALANCE

I would have never been able to develop and implement the many different programs in biotechnology without the advice, encouragement, and support of the NIDCR Directors, Drs. Harold Slavkin, and Lawrence Tabak. Their extraordinary vision for the future of biotechnology and its promises has been and continues to be an inspiration for me.

I have also received extremely useful mentoring from many extraordinary scientists in the extramural community and those at the NIH whom I have met throughout my career in extramural programs. Two of my colleagues in particular, Drs. Jeff Schloss (NHGRI) and Catherine Lewis (NIGMS), have been absolutely incredible in sharing with me their vision, experience and knowledge in different scientific and administrative areas. These relationships have been some of my most productive and collegial ever!

I would like to think that as a mentor I have contributed to the development of the careers of individuals who have worked with me as well as of those whom I have mentored in applying for and obtaining NIH grant support. I am particularly happy for the new investigators I have advised who are now advanced to tenured faculty members in their respective academic institution, are among the leaders in biotechnology, have received NIH MERIT Awards, and have become superb teachers and mentors to a new generation of scientists.

Ruth Emilie Nowjack-Raymer, Ph.D.

Director, Health Disparities Research Program, Center for Clinical Research, Division of Extramural Research

EDUCATION

Ph. D.: (Epidemiology) University of London, University College London Medical School, 2000

Clinical Research Fellowship: (Behavioral and Social Sciences, Randomized Clinical Trials) University of Washington, 1997

Internship (Global Public Health): World Health Organization, Geneva, Switzerland, 1984

M.P.H.: University of Michigan, 1984

B.S.: (Dental Hygiene, Health Promotion, Education) Ohio State University, 1972

RESEARCH INTERESTS

Elimination of the disproportionate burden of oral diseases and conditions suffered by vulnerable populations, including racial/ethnic minorities, urban and rural-dwelling poor, those with developmental and acquired disabilities, and elders; cross-cutting research approaches including epidemiology, social and behavioral interventions, clinical trials, community-based studies

PIVOTAL EVENTS

Having seen the sequelae of social disadvantage, I have always had a passion to make a difference in the lives of vulnerable populations—this passion keeps me mission-focused. Rather than a pivotal event, it's the diversity of my career trajectory that has contributed most to my ability to direct a wide range of research approaches in varied settings. The puzzle pieces of my career as a clinician, dental public health program administrator for a large State, World Health Organization collaborator, officer of domestic and international professional organizations, clinical trialist, and epidemiologist now fit together beautifully to inform my role as Director of the Health Disparities Research Program. The common denominators that have made this possible are educational opportunities and strong mentors. Federal, State, institutional, and organization-based educational grants have been essential; and mentors—both men and women—have encouraged me to take risks and have advocated for novel opportunities.

MENTORING & WORK/LIFE BALANCE

Sixteen years ago, I was in Singapore working on a Global Program on AIDS project and was 7 months pregnant with my second child. While there, I saw an NIH official who noted that I was "in a happy family way," but he expressed regret that I'd "obviously chosen to be a mother rather than a scientist." Fortunately, my mother and other women had demonstrated that having a vibrant career and family were not mutually exclusive. Conducting and monitoring studies and programs have always meant considerable travel. While challenging, it was possible to meet both professional responsibilities and those of a nursing mother, a mother of teenagers, and even as a mother seconded to another country for 2 years. Social support, in my case from a terrific husband, was and remains essential. Excellent environmental supports such as e-mail, teleconferencing, teleworking, and managers who are supportive have enhanced this capacity.

Deborah D. Philp, Ph.D.

Director, Intramural Office of Education and Research Training, Division of Intramural Research

EDUCATION

Ph.D.: (Cell, Molecular and Developmental Biology) The City College and The Graduate School and University Center of the City University of New York (CUNY), 2000

M.Phil.: (Cell, Molecular, and Developmental Biology) The City College and The Graduate School and University Center, CUNY, 1999

B.S.: (Biology) The City College of New York, CUNY, 1989

RESEARCH INTERESTS

My areas of research interest are wound healing, hair growth, and angiogenesis.

PIVOTAL EVENTS

Aside from my ever-supportive parents and family, there are several people and events that have played an instrumental role in the success of my career. The key pivotal event that opened my eyes to a career in research occurred during my senior year at the City College of New York, CUNY. I became a part-time laboratory technician in the newly formed immunology laboratory of Dr. Jerry C. Guyden. Prior to working with Dr. Guyden, I thought that a career in medicine was my only option. In less than 1 year, I realized that my true passion was in biomedical research. Dr. Guyden encouraged me to pursue my master's and Ph.D. degrees with full financial support from the Division of Minority Opportunities in Research at NIGMS. Dr. Hynda Kleinman, my postdoctoral PI at NIDCR, was also

very important in my career pursuit. She helped fine-tune my scientific skills and build a network for future positions.

MENTORING & WORK/LIFE BALANCE

Mentoring is something that is very dear to me. My mentors have played an essential role in the pursuit of my career. My parents have been excellent. They taught my siblings and me that knowledge was a very powerful tool and that sharing it with others would help them become empowered. My Ph.D. advisor showed me the importance of being a mentor to students and taught me how to be a mentor by his actions. My postdoctoral PI was also an instrumental mentor for me as a woman in science. She showed me the importance of networking and being open to opportunities. She also taught me the importance of collaborating and sharing with others. Both my Ph.D. advisor and postdoctoral PI showed me that a healthy balance between family life and professional responsibilities does exist. With a strong support network at home and good communication, anything is possible.

Lillian Shum, Ph.D.

Director, Mineralized Tissue and Salivary Gland Physiology Program and Chief, Integrative Biology and Infectious Diseases Branch, Division of Extramural Research

EDUCATION

Postdoctoral Training:
(Growth and Development)
University of California
San Francisco, 1991–1995

Postdoctoral Training:
(Craniofacial Molecular Biology)
University of Southern California,
1989–1991

Ph.D.: (Anatomy, Cell, and
Developmental Biology)
University of North Carolina
at Chapel Hill, 1989

B.Sc.: (Biology and Biochemistry)
The Chinese University of Hong Kong, 1984

RESEARCH INTERESTS

Skeletal and dental biology and pathology; salivary gland biology and pathology; genomics, epigenomics, proteomics, and pharmacogenomics; tissue repair and regeneration

PIVOTAL EVENTS

Just 1 month into my postdoctoral training, my advisor called an urgent lab meeting. A newly published paper contained information to reveal the identity of an elusive family of proteins. He declared that we would enter the race. We worked, succeeded in less than 2 years, and published in *Science*. I was enlightened that success mandates the mentality of "us" rather than "me." The guiding principal is that our collective success is my success. This single project taught me to value the power of team science, to share a common goal, to plan and coordinate, to appreciate complementary expertise, to be independent yet interdependent, to be responsible and accountable, to be diligent, to strive for excellence, to share the credit, and to rise up to the occasion. I practice what I learned from this experience in my responsibilities to accelerate the progress of science for the benefit of public health.

MENTORING & WORK/LIFE BALANCE

Being mentored is a lifetime experience and mentoring others is a lifetime commitment. The relationship between a mentor and mentee is one of trust, respect, responsibility, and nurture, sharing successes and failures. One should seek multiple mentors in different aspects of learning and at different stages of one's life.

My family as well as my career are top priorities in my life, and these have reciprocal relationships. My family supports my pursuit of a professional career and my accomplishments bring joy and pride to my family. Growing up in Hong Kong, a society epitomizing East meets West, I observed contrasting cultures in which one values the homemaker and the other esteems the breadwinner. Pursuing both is the art of recognizing both roles consistently as "providers." It works most of the time for me but not always, and I am trying my best.

Marian F. Young, Ph.D.

Chief, Molecular Biology of Bones and Teeth Section, Craniofacial and Skeletal Diseases Branch, Division of Intramural Research

EDUCATION

Postdoctoral Fellowship: Lab of Developmental Biology and Anomalies, National Institute of Dental Research, 1981–1984

Ph.D.: (Developmental Biology) University of Connecticut, 1981

B.A.: (Biology) State University of New York at Oneonta, 1976

RESEARCH INTERESTS

Molecular biology of skeletal tissues, including bones, teeth, cartilage, and tendon

PIVOTAL EVENTS

My success was largely dependent on a series of supportive teachers and mentors. This mentoring started in the State University of NY with my biology and biochemistry professors, who encouraged me down a path to graduate school at the University of Connecticut. My mentor at U Conn taught me the "basics" of biomedical research and the importance of blending basic science with disease applications. Additional mentors during my postdoc at the NIDCR taught me different aspects about research, including management, an important feature that helped prepare me to run my own research program. Each one of these important mentors encouraged me to challenge myself toward higher degrees or in some way helped me get into positions that advanced my career. Some mentors were developed from the larger scientific community developed at scientific meetings where my work was presented and where newer contacts/networks additionally helped me with mentoring my own staff.

MENTORING & WORK/LIFE BALANCE

Several aspects were crucial to balancing family with professional responsibilities. I've given lectures on this topic at career development symposiums at professional meetings and I jokingly state that there are three important aspects of managing career and family. They are to have a good 1) spouse, 2) boss, 3) and colleagues. All three must be supportive in the advancement of your career. I've been extremely fortunate to have this in place throughout my career here at the NIH. They all "three" were flexible, supportive, and encouraged trying new challenges. They helped in times of need either by sharing their own experiences and provided advice or even chipped in their own time to help out.

National Institute of Diabetes and Digestive and Kidney Diseases

Carolyn Ward Miles, Ph.D.

Director, Clinical Obesity and Nutrition Program, Division of Digestive Diseases and Nutrition

EDUCATION

Ph.D.: (Human Nutrition and Foods) Virginia Polytechnic Institute and State University, 1977

M.S.: (Human Nutrition and Foods) Virginia Polytechnic Institute and State University, 1971

B.S.: (Human Nutrition and Foods) Virginia Polytechnic Institute and State University, 1969

RESEARCH INTERESTS

Nutrition, obesity, and bariatric surgery

PIVOTAL EVENTS

Moving to the Washington, DC, area was a pivotal event in my career. With this move, opportunities opened up for me to teach nutrition and to work in a variety of areas in the Federal Government. I was able to do hands-on research in the area of energy expenditure and through this experience I became very interested in the obesity problem in this country. Working at the Food and Drug Administration in regulation of nutrition-related products and in the areas of food labeling and health claims provided me with opportunities to learn about the development of government policies. Also, my years at the NIH have given me an opportunity to learn about what research is being done in the areas of nutrition and obesity and the opportunity to work with clinical studies that are looking for solutions to the obesity problem.

MENTORING & WORK/LIFE BALANCE

I have had the good fortune to have a number of good mentors starting with my major professor in graduate school. I have also enjoyed good mentoring experiences with many coworkers at my different places of employment during my career.

Balancing family and professional responsibilities has been easier for me than for many women because I have a very supportive husband who is very interested in seeing that I succeed in whatever I want to do.

INSIGHTS

I have had a varied career in academic institutions and government agencies. After graduate school, I because an Instructor in Pediatrics at the Medical College of Virginia, Virginia Commonwealth University and the Nutrition Consultant to the

Virginia State Inborn Errors of Metabolism Program. After moving to the Washington, DC, area, I taught undergraduate and graduate courses in nutrition at the University of Maryland. Most of my professional career has been as an employee of various government agencies. As a principal investigator at the Beltsville Human Nutrition Research Institute of the Department of Agriculture, I conducted research in the field of energy intake and expenditure. I gained experience with government regulatory policies while working in the Center for Food Safety and Applied Nutrition of the Food and Drug Administration. In this position, I was involved in writing regulations for infant formulas and dietary supplements and was also involved with development of food labeling and health claims regulations. I started working at the National Institutes of Health as a Scientific Review Administrator in the Review Branch of the National Institute of Diabetes and Digestive and Kidney Diseases before becoming a Program Director in the Division of Digestive Diseases and Nutrition.

Marva Monique Moxey-Mims, M.D.

Director, Pediatric Nephrology & Renal Centers Programs and Director, Applied Kidney Small Business Innovation Research Program, Division of Kidney, Urologic, and Hematologic Diseases

EDUCATION

M.D.: Howard University, 1983

B.Sc.: (Biology) McGill University, 1979

RESEARCH INTERESTS

Causes and treatment of chronic kidney diseases in children, pediatric transplantation, hypertension

PIVOTAL EVENTS

I think that my decision to become a pediatric nephrologist was pivotal. It was not my original plan, but as an intern, I found the nephrology patients to be the most fascinating. Additionally, the nephrology attendings were the most inspirational teachers. They obviously loved what they were doing and felt that they could make a significant difference in their patients' lives. I would come away from rounds with them feeling that I wanted to do the same. This is what continues to drive me now—a desire to have a positive impact on the lives of children with kidney disease, even though now it won't necessarily be by direct hands-on contact.

MENTORING & WORK/LIFE BALANCE

During my first academic appointment at State University of New York (SUNY) Buffalo, I was mentored by Dr. Bernice Noble, a wonderful pathologist/microbiologist. During my time working in her laboratory, she emphasized that with the appropriate support systems and realistic expectations, a woman could be both a mother and professional. She must determine what compromises she can live with and which things are simply nonnegotiable. It took a while for me to make peace with this reality, but it is what eventually led to my decision to leave my job as a pediatric nephrologist at Children's Hospital. My position at the NIH allows me to balance my family and professional responsibilities in a way that I find personally acceptable. I have an impact on the broader scientific community by developing research initiatives; I can see patients and still be at home with my family in the evenings and on weekends.

INSIGHTS

I obtained my undergraduate degree in biology from McGill University in Montreal, then with a desire to attend a historically black university, obtained my M.D. from Howard University in Washington, DC. I did both my general pediatric training and clinical pediatric nephrology training at Children's Hospital, Washington, DC, followed by a research fellowship at NIAID. I then took a position at SUNY Buffalo and Children's Hospital of Buffalo as an Assistant Professor of Pediatrics and staff pediatric nephrologist. I then returned to Children's Hospital of Washington and The George Washington University School of Medicine, where I was a staff pediatric nephrologist, eventually promoted to Associate Professor of Pediatrics and medical director of the kidney transplant program. This was followed by 2 years at the FDA in the Center for Devices and Radiological Health (my first step toward better balancing family and career). That then led to my current position at the NIH.

NIDDK

Constance Tom Noguchi, Ph.D.

Research Physicist and Chief, Molecular Cell Biology Section, Molecular Medicine Branch, Division of Intramural Research

EDUCATION

Ph.D.: (Physics) George Washington University, 1975

A.B.: (Mathematics and Physics) University of California, Berkeley, 1970

RESEARCH INTERESTS

My research program focuses on the molecular and cell biology of cytokine stimulation to promote progenitor cell survival, proliferation, and differentiation. Specific applications relate to erythroid differentiation and strategies to treat sickle cell anemia, and to the protective effects of erythropoietin in ischemia/trauma in nonhematopoietic tissue such as brain, heart, and muscle.

PIVOTAL EVENTS

Opportunity Knocks: While a physics graduate student, I met Alan Schechter, an NIDDK intramural scientist at a holiday party. With his encouragement, I obtained an NIGMS postdoctoral fellowship to work at the NIH.

Basic Training: When other NIDDK PIs proposed a conceptual model for sickle hemoglobin polymerization, my experience in numerical analysis from theoretical physics allowed me to adapt their approach to explain our measurements of hemoglobin polymerization in intact red cells from sickle cell patients.

Follow the Data: While working on erythropoietin as a therapeutic strategy for sickle cell anemia, I discovered the embryonic brain expressed a high level of the receptor for this cytokine that is primarily required for red blood cell production. At NIDDK, I was able to further characterize the receptor in nonblood cells, which led to a broader understanding of erythropoietin as a protective agent in endothelium, brain, muscle, and other tissues.

MENTORING & WORK/LIFE BALANCE

Research is a social endeavor and a mentor can be invaluable in guiding you through some of the hurdles that you will encounter along the way. Mentoring can come from numerous individuals, not only your supervisor. Take the opportunity at meetings and seminars to expand your network.

There is never a convenient time to have a family. Once the decision to have children is made, the support from your spouse, your supervisor, and fellow colleagues is invaluable. Child care is the most difficult problem to solve as a working parent. You must feel secure in your situation so that you can focus on your research when you are at work. Although research is not a 9-to-5 activity, make the time to enjoy the family and to have meals together. If necessary, return to the lab after dinner or after the children have gone to bed.

INSIGHTS

Take the opportunity to mentor and teach at all levels. As research scientists, we have the opportunity to share the excitement of new discovery, to explain the purpose of scientific research, and to communicate the significance of our discoveries. As mentors and teachers, we promote and develop the next generation of investigators, we increase understanding and appreciation for research, and we pay back to the community for their continuing support. As a community service, offer to speak in schools or judge science fairs. In general, volunteering increases your exposure and can lead to unexpected opportunities. While president of the local childcare organization, another parent asked me to become a role model for a book series on scientists. I now have a biography written for elementary school-aged children and have been contacted by students around the country who have done reports based on the book.

Wei Yang, Ph.D.

Chief, Structure and Mechanism Section, Laboratory of Molecular Biology, Division of Intramural Research

EDUCATION

Ph.D.: (Biochemistry & Biophysics) Columbia University, 1991

M.Ph.: (Biochemistry) Columbia University, 1988

M.A.: (Biochemistry) Columbia University, 1986

B.A.: (Biochemistry) SUNY at Stony Brook, 1985

Undergraduate: (Biochemistry) Fudan University, China, 1980–1983

RESEARCH INTERESTS

We study structure and mechanism of DNA repair, recombination and replication, and implications for cancer and developmental biology.

PIVOTAL EVENTS

The decision to join NIH was a pivotal point for my success. The intramural research funding and supportive colleagues, who provide a vibrant and nurturing research environment at NIDDK and the Laboratory of Molecular Biology in particular, have made my research career pleasurable, successful, and rewarding.

MENTORING & WORK/LIFE BALANCE

Throughout my training and independent research career, I have been very fortunate to be surrounded by encouraging and nurturing mentors and colleagues, who have never regarded me differently because I am a woman and have always been proud of what I do. The reduced pressure on time management as an intramural research scientist allows me to think more, work at bench, and have a relatively easy balance of family and professional responsibilities.

INSIGHTS

Being in a nurturing and first-class scientific environment is the key to my own success in science. As a graduate student at Columbia University, I determined the first protein structure using a selenomethionine-substituted protein and the novel Multiwavelength Anomalous Dispersion (MAD) method, developed by my thesis advisor, Professor Wayne Hendrickson. Dr. Hendrickson showed me the joy of research and the way to success by devotion to excellence. As a postdoctoral fellow at Yale University, I determined the crystal structure of a DNA recombinase complexed with a 34 bp DNA substrate, which was the longest DNA crystallized at the time. There I was inspired by my advisor, Professor Thomas Steitz, who exemplifies how to ask relevant questions in science and how to design experiments to most effectively get an answer. At the Laboratory of Molecular Biology (LMB), NIDDK, I am blessed to have enormously supportive senior colleagues, Drs. David Davies, Gary Felsenfeld, Martin Gellert, and Kiyoshi Mizuuchi. The environment of LMB is open, stimulating, rigorous, and caring. In this environment, I have been able to have an impact on our understanding of DNA mismatch repair and translesion DNA synthesis.

I highly recommend young women scientists to find places that receive them with open arms. Outside of my immediate working environment and among people who don't know me well, I often find that I have to be outspoken and firm. Our society has given women equal opportunities, but old habits of patronizing women are slow to disappear. Outstanding mentors and the excellent environment at NIH have given me the courage and support to speak up and stand by my views, which in the long run will allow us all to be scientists and not 'women' scientists.

Carole A. Bewley, Ph.D.

Senior Investigator and Chief, Natural Products Chemistry Section, Laboratory of Bioorganic Chemistry, Division of Intramural Research

EDUCATION

Cancer Research Institute Postdoctoral Fellow: (Protein NMR and Structural Biology) Laboratory of Chemical Physics, NIDDK, 1996–1999

Ph.D.: (Oceanography and Natural Products Chemistry) Scripps Institution of Oceanography, University of California, San Diego, 1995

B.S.: (Chemistry) San Diego State University, 1985

RESEARCH INTERESTS

Natural products chemistry, protein–carbohydrate interactions, nuclear magnetic resonance spectroscopy, HIV, tuberculosis

PIVOTAL EVENTS

It is probably fair to say that my path to NIH is not well-traveled. A fascination with marine organisms and organic chemistry, and hundreds of hours spent underwater led me to the graduate program at Scripps Institution of Oceanography. There, an appreciation of the diversity of chemical structures and biological activities of natural products produced by marine organisms led to the obvious—a desire to determine the structural basis for their mechanism(s) of action. Selecting the best possible mentors and institutes for carrying out research in these areas (SIO and NIH, respectively) contributed greatly to my growth and success as a scientist.

MENTORING & WORK/LIFE BALANCE

Undoubtedly, one of the most gratifying aspects of directing a research program at the NIH is the opportunity for one-on-one interactions with and mentoring of the talented high school, undergraduate, and graduate students training at NIH, and the dedicated postdoctoral fellows who deserve the credit for making each project come alive. Striking a balance between family, research, and all that each entails, is challenging. But the rewards taken and lessons learned from each, combined with the talented members of my research group, make this possible and pleasurable.

NIDDK

Orna Cohen-Fix, Ph.D.

Senior Investigator and Chief, Cell Cycle Regulation and Nuclear Structure Section, Laboratory of Molecular and Cellular Biology, Division of Intramural Research

EDUCATION

Postdoctoral Fellow: The Carnegie Institution of Washington, Baltimore, 1994–1998

Ph.D.: (Biochemistry) The Weizmann Institute of Science, Israel, 1994

B.Sc.: (Biology) Tel-Aviv University, Israel, 1986

RESEARCH INTERESTS

Cell cycle regulation: The mechanisms that govern timely chromosome segregation, regulation of chromosome movement during mitosis, pathways involved in the response to intracellular damage. Nuclear architecture: The connection between nuclear structure and nuclear function, proteins and processes involved in maintaining nuclear shape and organization, the functional significance of different subnuclear compartments/territories.

PIVOTAL EVENTS

The things that had the most profound affect on my success as a scientist were not events, but rather people. As a woman, the uncertainty involved in deciding to become a scientist was twofold: Am I good enough to lead a group of young scientists toward new and exciting discoveries, and can I do so without giving up my desire to have a family? Throughout the years, I've received tremendous support from my mentors, colleagues, and husband. My mentors encouraged me to follow my passion, my colleagues shared with me their thoughts and experiences, and my husband shared full responsibility (and sometimes more) in raising our kids. Moreover, the environment at NIH inspired me to embark on a new research direction, allowing me to take risks and explore uncharted territories. As it turns out, to create a scientist also takes a village.

MENTORING & WORK/LIFE BALANCE

Balancing family and career is challenging; one is constantly faced with the dilemma that neither is receiving the attention they deserve. But having done it, I can say that I wouldn't have it any other way. Having a family makes me a better scientist: it puts things in perspective and it makes me a more balanced person. Likewise, being a scientist makes me a better parent: much of what we teach our kids is by example, and my kids see that pursuing one's passion is a sure recipe for happiness and a sense of fulfillment. My teenage daughter is set on becoming a scientist; surely I must be doing something right. I always felt that I could be just as successful as my male counterparts, and having done so while raising a family makes it all the more rewarding. I undoubtedly sleep less than they do, but I'll catch up when I retire.

Ann Dean, Ph.D.

Senior Investigator and Chief, Gene Regulation and Development Section, Laboratory of Cellular and Developmental Biology, Division of Intramural Research

EDUCATION

Ph.D.: (Biochemistry) George Washington University, 1981

B.A.: (Chemistry) Bucknell University, 1966

RESEARCH INTERESTS

My interests are in fundamental aspects of gene activation by distant enhancers, which underlie the control of numerous gene families with important roles in mammalian development. The areas of interest covered by research in my laboratory include human globin gene regulation and therapeutic possibilities to address genetic diseases such as sickle cell disease and Đ-thalassemia, control of gene expression by enhancers and chromatin insulators, and epigenetics of gene regulation.

PIVOTAL EVENTS

My undergraduate education was begun in a period when it was still unusual for women to enter professional ranks and in many cases they were discouraged from doing so. Indeed, my undergraduate chemistry advisor suggested that if I intended to marry, I should not apply to graduate school. I feel very fortunate to have had professional mentors at the NIH such as Dr. Christian Anfinsen, winner of the 1972 Nobel Prize in Chemistry, who first encouraged me to enter graduate school and Dr. Robert Simpson, who unceasingly and strongly supported the launching of my independent research career. I have particularly prized the continuity of NIH support in my research efforts.

MENTORING & WORK/LIFE BALANCE

I have mentored almost 30 students and postdoctoral fellows who are all engaged in professional studies or have obtained academic or research appointments. I have found it tremendously rewarding to follow the paths of these individuals, both the students, almost all of whom have gone onto medical school or to the pursuit of a Ph.D., and the young scientists building research careers.

My husband and I have four children. During the time when the children were young, I maintained a relatively small lab group in order to maximize the time and involvement I was able to devote to both my children and trainees. I have found that there has been a strong synergy to these endeavors and I feel that raising children has made me a better mentor, while mentoring young scientists has made me a better parent.

Carol Renfrew Haft, Ph.D.

Senior Advisor for Cell Biology and Associate Director for Grants Administration, Division of Diabetes, Endocrinology, and Metabolic Diseases

EDUCATION

Postdoctoral Fellowship:
Diabetes Branch, NIDDK,
1991–1996

Ph.D.: (Biochemistry and
Cellular and Molecular Biology),
The Johns Hopkins University,
School of Medicine, 1991

B.S.: (Chemistry),
University of Delaware, 1984

RESEARCH INTERESTS

Obesity and diabetes with a particular emphasis on fat cell and pancreatic beta cell biology, protein trafficking, protein misfolding and misprocessing, and science administration

PIVOTAL EVENTS

As an undergraduate, Dr. John Burmeister, chairman of the Chemistry department, regularly encouraged me to talk to faculty with graduate students and postdoctoral fellows, and to consider doing some research in my spare time. Eventually, curiosity got the best of me, and the more I learned about bench research, the more interested I became in giving it a try. During my junior and senior years of college, I learned firsthand about academic laboratory research and liked it, but unfortunately, I had never seen firsthand any women lecturers, lab technicians, graduate students or postdocs in the Chemistry department, and this was concerning. Then during my senior year, I got approval to take a graduate-level biochemistry course, and to my great surprise and delight, many of the lectures were taught by a woman, Dr. Roberta Coleman. She was engaging, knowledgeable, and accomplished. She was a wonderful role model, approachable and personable, and also married with two children. The next year I applied to graduate school.

MENTORING & WORK/LIFE BALANCE

Throughout my career, I have actively been involved in different kinds of mentoring: advising high school, college, and medical students in various research activities; giving career day talks in local middle schools; serving as a facilitator at lunches for women in cell biology; and in my present job, assisting young scientists obtain NIH research support. I would encourage all to consider mentoring as an important way to improve our ability to recruit and maintain a varied pool of individuals in the biomedical research workforce. In addition to scientific mentoring, it is important to discuss strategies for dealing with stress and balancing professional and personal responsibilities. Being a mother of two, and having type 1 diabetes since childhood, I have learned that having ambitious but realistic goals, a well-constructed plan to achieve the goals, and strong partnerships with family members, coworkers, and various health professionals can go a long way to achieving peace at home and success at work.

Maren R. Laughlin, Ph.D.

Senior Advisor for Integrative Metabolism, Division of Diabetes, Endocrinology, and Metabolic Diseases

EDUCATION

Ph.D.: (Physical Chemistry)
Yale University, 1988

A.B.: (Chemistry)
Oberlin College, 1982

RESEARCH INTERESTS

The study of intermediary metabolism as it relates to diabetes and obesity and the application of imaging technologies to research and medicine in diabetes and obesity

PIVOTAL EVENTS

Science can be faddish, and current trends include the general notions of Integrative or 'Team' science and 'Systems Biology'—but these overused terms have personal resonance for me. My scientific training took place in highly integrative environments where projects routinely required experts, ranging from clinicians and basic biologists through quantum physicists, mathematicians and electronics engineers. This tremendously stimulating environment forced me to think about problems from multiple points of view. My most interesting work in the extramural NIH has been where cross-fertilization from one field to another was required, usually in the form of innovative technology developed for and applied to novel biological questions. This requires new shared language and leads to new, interesting ideas, and is part of an exciting trend toward bigger picture thinking in biology and medicine.

MENTORING & WORK/LIFE BALANCE

It was difficult as a woman in science to learn to think through problems independently and trust my own opinions. This ability developed first through a series of painful shocks and eventually through professional successes. This process cannot be replaced by mentoring, but certainly a culture where mentoring is globally valued can improve the chances of success, especially for women. A major part of my job in extramural NIDDK is to advise applicants regarding the grant process and the specific area of science. Over time, I've learned far more than I've transmitted, and it has given me the chance to interact with many outstanding, fascinating people. Mentoring is needed for staff career development here at the NIH as well—it is not an easy place to negotiate.

Like many of us, my scientist husband and I have sacrificed both being near family and job opportunities in order to be together. The NIH and Washington, DC, has provided a rich, stimulating environment to work and live happily within the constraints of a two-scientific-career family.

Barbara Linder, M.D., Ph.D.

Senior Advisor for Childhood Diabetes Research, Division of Diabetes, Endocrinology, and Metabolic Diseases

EDUCATION

Fellowship: (Pediatric Endocrinology) NIH, 1986–1989

Residency: (Pediatrics) Children's Hospital of Philadelphia, 1982–1985

M.D., Ph.D.: (Physiology) Columbia University College of Physicians and Surgeons, 1982

B.S.: (Biology) Cornell University, 1975

RESEARCH INTERESTS

Pediatric endocrinology, with a special emphasis on diabetes

PIVOTAL EVENTS

I was fortunate to have a great mentor during a summer research experience while I was in college. I wasn't exactly sure what I wanted to do with my life. This individual steered me to applying to M.D./Ph.D. programs, which enabled me to combine my interest in medicine with my desire to conduct research. I didn't even know such programs existed! Although my training was long and sometime schizophrenic (alternating between purely clinical work and basic science in the lab), eventually I was able to find an area—pediatric endocrinology—that captured my imagination as a clinician and a scientist. Although I have now left laboratory science behind, those experiences have enabled me to bring scientific rigor to the conduct of clinical research, a passion that I try to impart to pediatric fellows whom I mentor.

MENTORING & WORK/LIFE BALANCE

Balancing family and a demanding job is difficult. There is always more work to do than can be squeezed into a work day, and sometimes the stress of the day comes home. I have been very fortunate at the NIH to work in an environment where family is valued. I think this is critical because many working mothers feel guilty about taking time off for family and tend to "overcompensate" for doing so. A great mentor will make it clear that it is not only acceptable, but it is important to take time off to see the school play or tend to a sick child, and that you are not valued less because you do so. I also feel that working in an environment where parents (working moms AND dads) can share stories about their children helps increase productivity, because it creates a shared bond that promotes cooperation and collegiality.

Catherine McKeon, Ph.D.

Senior Advisor for Genetic Research, Division of Diabetes, Endocrinology, and Metabolic Diseases

EDUCATION

Ph.D.: (Human Genetics)
Medical College of Virginia, 1980

B.A.: (Cell and Molecular Biology)
State University of New York
at Buffalo, 1975

RESEARCH INTERESTS

Human genetics, genetic diseases

PIVOTAL EVENTS

While I was always interested in science, I wanted to do research that improved human health. In graduate school, I began a project where I was studying patients with a rare genetic disease. In studying these children, it became clear from my research that two children had a different but related genetic disease that could benefit from large doses of a particular vitamin. This discovery improved the symptoms for these two patients. From that time on, I have been involved in research on genetic diseases or overseeing grant programs in genetic diseases that can improve diagnosis and treatment for patients with these conditions.

MENTORING & WORK/LIFE BALANCE

I think one of the most challenging aspects of a career is balancing family life and professional responsibilities. I have two children and I used to dread the memo that would come from the school that said something like, "Your child has been chosen to receive an award tomorrow and we know you will be there to support your child." While I did miss some of these impromptu award ceremonies, I was able to make most of

them. Since many of my responsibilities require reading and writing, they can be conducted at home or after hours. Communication is now done mainly through e-mail and many meetings can be joined by phone. The NIH provides laptops, blackberries, and computer support, which supports working from remote locations.

Catherine M. Meyers, M.D.

Senior Scientific Officer and Director, Inflammatory Renal Diseases Program, Division of Kidney, Urologic, and Hematologic Diseases

EDUCATION

Fellowship: (Nephrology)
University of Pennsylvania, 1991

M.D.: University of Illinois, 1984

A.B.: (Chemistry) University of Chicago, 1980

RESEARCH INTERESTS

Renal inflammation and progression of kidney disease, kidney transplantation, diabetic nephropathy, polycystic kidney disease, hemodialysis access

PIVOTAL EVENTS

Mentoring has an enormous impact on one's success. Although early life events initiated a keen interest in studying the sciences and finally medicine, mentors I have had along the way provided crucial guidance for important professional decisions and milestones. Training at an outstanding institution with a strong history of biomedical research was a major decision that facilitated my commitment to a career in science. This environment provided experienced mentors, requisite facilities for research, and a diverse community of researchers with whom to collaborate. In my early career, some mentors and successful collaborators were also women scientists—a trend that has continued throughout my career. Lessons learned at the early stages were essential for moving beyond the training phase and pursuing my own scientific interests, as well as appreciating the need for providing similar insights to younger scientists.

MENTORING & WORK/LIFE BALANCE

From early years of training in medicine, I was fortunate to have had several mentors who were nephrologists. Their palpable enthusiasm for their work provided a solid foundation for my future interests in nephrology, and ultimately in basic research. Perhaps the most useful advice given to me was to focus on pursuing my own goals and interests in research, rather than simply pursuing professional opportunities.

Balancing a family life with professional responsibilities presents obvious challenges to women scientists. Time is a limited resource and demands of rich professional and personal lives are considerable. Harmonizing the two requires more than just organization and inspiration. Fortunately, new concepts of family life are emerging in the 21st century. A supportive and involved spouse has been essential for helping me balance these two responsibilities.

Rebekah Sarah Rasooly, Ph.D.

Deputy Director, Division of Kidney, Urologic, and Hematologic Diseases

EDUCATION

Ph.D.: (Genetics)
Michigan State University, 1989

A.B.: (Biology)
Harvard University, 1982

RESEARCH INTERESTS

Genetics, genomics, genetic disease, model organism research, meiosis, ethical use of biospecimens

PIVOTAL EVENTS

As a high school junior and senior, I worked in the lab of a distinguished female microbiologist. Terry Krulwich trained one or two Westinghouse Science Talent Search contestants each year for many years, and I was privileged to be one of her protégées. Terry was a great mentor, committed to excellent science, but also to training of students at all levels and to her young family. Watching her run a large lab, handle administrative responsibilities, analyze data, write papers and get grants erased any doubts in my mind about a career in science.

MENTORING & WORK/LIFE BALANCE

It is very difficult to balance any serious career with family obligations. It is especially difficult when the career is academic laboratory research, which can consume every waking hour with new experiments, new literature to read, new grant applications to write, and various teaching and administrative responsibilities. Nevertheless, I loved running a research lab in the 1990s, and teaching my kids and my students about the excitement of discovery. More recently, I have found that moving to NIH to oversee large research programs is an even better way to enjoy scientific discovery; my job demands that I keep up with a broad range of research projects and follow the progress of many of the scientists contributing to the field. As my children get older, they also appreciate the significance of my work, which has a national (international?) impact.

NIDDK

Barbara Rehermann, M.D.

Chief, Immunology Section, Liver Diseases Branch, Division of Intramural Research

EDUCATION

Clinical Fellow and Principal Investigator: (Gastroenterology) Medizinische Hochschule Hannover, Germany, 1995–1998

Postdoctoral Fellow (Immunology): The Scripps Research Institute, La Jolla, CA, 1993–1995

Residency: (Gastroenterology) Medizinische Hochschule Hannover, Germany, 1992–1993

Internship: University Clinic Essen, Essen, Germany, 1991–1992

M.D.: Medizinische Hochschule Hannover, Germany, 1991

RESEARCH INTERESTS

Basic and translational immunology; virus/host interaction; mechanisms of viral and autoimmune liver diseases

PIVOTAL EVENTS

I consider a key factor the early exposure to analytical thought processes with both a classical humanities (Latin) and science education (biology, chemistry, and physics) during preparatory school. I entered medical school with the aims to learn how to treat patients as a physician and to understand the molecular and immunologic basis of diseases as a researcher. This was also reflected in both clinical and research postdoctoral fellowships.

A second key factor was the opportunity to work for and learn from outstanding experts who introduced me to the world of research and to explore uncharted territory: Drs. Marta Szamel, Klaus Resch, and Michael Manns, Medizinische Hochschule Hannover; Dr. Francis Chisari, The Scripps Research Institute; and Drs. Jake Liang and Jay Hoofnagle, NIDDK.

A third factor was the opportunity to experience research in international settings. After completing a 2-year research thesis during medical school, I received a scholarship for advanced research at Memorial Sloan Kettering Cancer Center. After a clinical internship and residency in Hannover, Germany, I then moved across the Atlantic a second time to pursue a postdoctoral research fellowship at The Scripps Institute and finally, to my current position at NIH.

MENTORING & WORK/LIFE BALANCE

Mentoring extends beyond supervisor/staff relationships. Often, a mentor can be found outside one's own division or department, yet still closely involved in guidance, asking questions, inviting self-reflection, and sharing experiences. At NIH, I served as mentor to several NIH postdoctoral fellows outside my own Institute. Within NIDDK, I helped institute a mentoring program for tenure-track investigators and organized career development meetings for international postdoctoral fellows. Mentoring is rewarding not only for the mentee, but also for the mentor—I enjoy keeping in contact with and following the careers of investigators who trained in my laboratory and are now located at research institutions in the United States, Europe, Asia, and South America.

The statement "Balancing family with professional responsibilities" suggests that both sides must match like two weights placed on a scale. This can be misleading, because the actual proportions may change during life. At the same time, one should not be one-dimensional: work, family, and the development and maintenance of other interests such as arts, sports, etc. are all essential to realize one's full potential.

Susan Z. Yanovski, M.D.

Co-Director, Office of Obesity Research, Office of the Director

EDUCATION

M.D.: University of Pennsylvania, 1985

B.S.W.: Widener University, 1978

RESEARCH INTERESTS

Prevention and treatment of obesity and the study of binge eating disorder

PIVOTAL EVENTS

I was able to develop my own protocols and serve as Principal Investigator on several clinical research projects while still a fellow in intramural NIH. I can't think of any other research institution where someone at my early career stage would have been given that opportunity.

MENTORING & WORK/LIFE BALANCE

I've been fortunate to have mentors and supervisors who have understood the importance of balancing work and family life, and whose flexibility has enabled me to be successful in both "careers."

National Institute on Drug Abuse

Nora Volkow, M.D.

Director, NIDA; Chief, Laboratory of Neuroimaging, Division of Intramural Clinical Biological Research, National Institute on Alcohol Abuse and Alcoholism

EDUCATION

Residency: (Psychiatry) New York University, 1980–1984

M.D.: National University of Mexico, Mexico City, 1980

B.A.: (Biomedical Science) Modern American School, Mexico City, 1974

RESEARCH INTERESTS

I am interested in understanding how the human brain works. I am particularly interested in investigating the processes that drive our motivations on day-to-day activities as well as the processes that allow us to exert control over our emotions and desires and how these get disrupted by the repeated use of drugs and how they lead to addiction. I am also interested in how these two circuits (motivation and inhibitory control) participate in obesity and in Attention-deficit hyperactivity diseaser (ADHD) and how they change as we age.

PIVOTAL EVENTS

My maternal grandfather committed suicide when I was 8 years old. However, it was not until many years later that my mother revealed to me that he suffered from alcoholism and in desperation had killed himself. My mother had kept this a secret for fear I would be ashamed of him. But of course I was not; it just made me keenly aware of the loneliness and isolation of a person with addiction, and of the suffering their families experience. I knew then that I wanted to commit my career to bringing treatment to individuals affected by addiction just as one brings treatment to any of the other medical diseases.

MENTORING & WORK/LIFE BALANCE

My work is an integral part of my life and I am fortunate to have a husband who is as passionate about his work as I am about mine. This has allowed me to focus my energies into my professional life. Mentoring promising young scientists has been one of the most rewarding aspects of my career. Among the many women whose training I have guided who have gone onto achieve notable success in their scientific careers are Rita Goldstein, Nelly Klein, and Congwu Du.

INSIGHTS

Before assuming the role of Director of the National Institute on Drug Abuse (NIDA), I spent most of my professional career at the Department of Energy's Brookhaven National Laboratory (BNL) in Upton, New York, where I held several leadership positions, including Director of Nuclear Medicine, Chairman of the Medical Department, and Associate Director for Life Sciences. In addition, I was a professor in the Department of Psychiatry and Associate Dean of the Medical School at the State University of New York-Stony Brook. I have published more than 400 peer-reviewed articles, over 65 book chapters, and edited 3 books on the use of neuroimaging in studying mental and addictive disorders. I was selected for membership in the Institute of Medicine of the National Academy of Sciences (2000) and have been honored with numerous awards for scientific leadership, including the Kuhl-Lassen Award from the Society of Nuclear Medicine, (1999); the Joel Elkes International Award for Clinical Research from the American College of Neuropsychopharmacology (ACNP) (1999); the Paul Aebersold Award from the Society of Nuclear Medicine (2003); the Thomas William Salmon Award from the New York Academy of Medicine, (2004); the Simon Bolivar Award, American Psychiatric Association, (2005); the Public Service Award from the Society for Prevention Research (2005); the American Academy of Addiction Psychiatry's Founder's Award (2005); the American Psychological Association's Presidential Citation (2005); and the Star of Science Award from the Children's Brain Research Foundation (2006). I was recently named one of 20 people to watch by *Newsweek* magazine in its "Who's Next in 2007," selected among the 100 the most influential people in the world by *TIME* (2007) and named "Innovator of the Year" by *U.S. News & World Report* in 2000.

Marilyn A. Huestis, Ph.D.

Chief, Chemistry and Drug Metabolism Section, Clinical Pharmacology and Therapeutics Research Branch, Intramural Research Program

EDUCATION

Ph.D.: (Toxicology) University of Maryland, 1992

M.S.: (Clinical Chemistry) University of New Mexico, 1979

A.B.: (Biochemistry and Physiology) Mount Holyoke College, 1970

RESEARCH INTERESTS

My research program seeks to discover mechanisms of action of cannabinoid agonists and antagonists, effects of in utero drug exposure, and the neurobiology and pharmacokinetics of MDMA (Ecstasy). My section also supports medication development projects, including the use of buprenorphine and methadone in opioid dependence in pregnant and lactating women.

PIVOTAL EVENTS

I have worked in interesting positions in analytical, emergency and forensic toxicology, therapeutic drug monitoring, and clinical chemistry from the time of my undergraduate degree. As a military wife, moving every 2 years, opportunities for graduate education were restricted, and employment options diverse. I took advantage of each circumstance to gain knowledge and experience in biomedical applications, instrumentation, method development and validation, laboratory management, and most importantly, developed a passion for understanding how toxicology can contribute to resolving one of the major problems in our country, drug abuse. I enjoyed and took full advantage of the chance to network with professionals around the country and to actively participate in national professional organizations that enriched my education and skills. I directed 1 of the first 10 laboratories, out of over 200 applicants, to be certified to conduct federally mandated drug testing. At the first opportunity, I began my doctoral research into the pharmacodynamics and pharmacokinetics of cannabinoids in humans, at a time when my children were finishing high school and starting college. The challenges, excitement, joy, and frustration of clinical research ensured that I would not return to the corporate world, but attempt to forge a research career at the National Institute on Drug Abuse. Based on my analytical skills, I was selected to work at NIDA while I pursued my doctorate,

and learn the new skills of study design, and correlation of the onset, peak, and duration of cognitive, physiological, subjective, and biochemical effects with drug and metabolite concentrations. I was fortunate to have a Scientific Director who valued hard work, productivity, and ideas, and I entered the tenure-track program and became Acting Chief and later Chief, of the Chemistry and Drug Metabolism Section.

MENTORING & WORK/LIFE BALANCE

I have held leadership positions in multiple laboratories hiring, training, and mentoring many young women in a field with few female scientists. I also balanced career and parenthood raising a young son and daughter during my master's and doctoral degrees. Perhaps the most satisfying and enjoyable aspects of my career has been mentoring women in the United States and developing countries. I am an adjunct associate professor of toxicology at the University of Maryland and have had the pleasure of directing the doctoral research of nine graduate students (six women). Balancing work and home responsibilities has always been a challenge, especially handling the self-imposed guilt feelings about work when you are with your children, and about your children when you are at work. A positive aspect of having a career outside the home is that your children see your passion for your work, see the effort that you invest, and learn what hard work and dedication can achieve. I feel that finding the right balance between your research and your family is one of the most difficult aspects of my career.

INSIGHTS

I have more than 140 peer-reviewed manuscripts, book chapters, and monographs and over 220 abstracts presented at national and international meetings. In 2007, I received the Irving Sunshine Award for excellence in clinical toxicology from the International Association of Therapeutic Drug Monitoring and Clinical Toxicology. I was awarded the American Academy of Forensic Sciences' Rolla N. Harger Award for lifetime contributions in forensic toxicology in 2005, and the Irving Sunshine Award for "Outstanding Research in Forensic Toxicology" in 1992. I am past president of the Society of Forensic Toxicologists, past Chair of the Toxicology Section of the American Academy of Forensic Sciences, and the first woman president of the International Association of Forensic Toxicologists in its 44-year history. I serve on the U.S. Anti-Doping Agency's Research Advisory Panel, was recently selected for the World Anti-doping Agency's Prohibited List Committee, and provide consultation for the Office of National Drug Control Policy, and Departments of Defense, Transportation, and Health and Human Services. I received tenure in 2005, illustrating that there is no one correct path or age or sex for success at NIH; opportunities exist for all who are willing to dedicate themselves to their work and who don't give up their dreams.

Amy Hauck Newman, Ph.D.

Chief, Medicinal Chemistry Section, Medications Discovery Research Branch, Intramural Research Program

EDUCATION

Ph.D.: (Medicinal Chemistry) Medical College of Virginia, Virginia Commonwealth University, 1985

B.S.: (Chemistry) Mary Washington College, 1980

RESEARCH INTERESTS

Design and synthesis of novel compounds to elucidate neurochemical mechanisms underlying the reinforcing effects of drugs of abuse; characterizing drug-receptor interactions at the molecular level and relating these to behavior; current targets are dopamine and serotonin transporters, D2-receptor family, with a focus on D3, mGluR5 receptors

PIVOTAL EVENTS

The most pivotal event in my early research career was when I was leaving my postdoctoral fellowship to become a principal investigator at Walter Reed Army Institute of Research (WRAIR). Before leaving, I discussed with my postdoc advisor a project idea that stemmed from a discovery I had made in his lab. He strongly discouraged me from pursuing that project and insisted that I establish my own distinctive program, not an extension of his. Although at that moment, I felt much like a baby bird being catapulted from the nest, it forced me to design a unique research project that did not overlap with anything I had done before and turned out to be quite interesting. A few years after I had established my own lab at WRAIR, I was recruited to come to NIDA to build a medicinal chemistry program, a second milestone in my career as a scientist.

MENTORING & WORK/LIFE BALANCE

When I was being recruited by NIDA in 1990, I was 7 months pregnant with my first child. I explained that I was committed to having a successful and integrative research program in medicinal chemistry, but that this would necessarily have to coincide with my family responsibilities and would require flexibility. My soon-to-be lab chief, Dr. Jon Katz said, "o.k." and he has been true to his word ever since. Over the next 3 years, I had two more children, was grandfathered into the new NIH tenure track, and published the first of many papers (with Jon) describing our novel dopamine uptake inhibitors that were not cocaine-like in animal models, which was essential heresy of the time. There were no female role models at NIDA,

few women in Principal Investigator (PI) positions, and none who had the time to take notice of an underling. But I had the support of those who worked with me and was ultimately able to build a multicollaborative and exciting research program that continues to challenge me to balance both worlds.

INSIGHTS

One of the most exciting aspects of my career at the NIH has been to be able to "grow" my program in so many directions, essentially "on a dime" and watch drug design on paper progress through a tricky chemical synthesis to a final new compound that has pharmacological properties like no other. Every step along the way, we derive insight, and every piece of biological data is then used to design that next chemical modification. Molecular biology technology has provided a particularly exciting partner for us as we can now work with the chemistry of both our small molecules and the target protein, to pinpoint those drug-receptor interactions and translate that resulting dynamic connection into hypotheses about how our compounds affect behavior. In this regard, mentoring is an easy and natural projection of my own enthusiasm and love of science that instills in my group the passion to work through that tough synthetic scheme or that complicated set of spectra to ultimately characterize that next critical piece to the puzzle. Moreover, I believe that one of my "keys to success" is my desire to work with other neuroscientists to ensure that we are making important molecular tools and that they are being used in the most effective way to answer biological questions. I now collaborate with more than 25 scientists around the world who evaluate our novel compounds in multiple in vitro and in vivo models of drug abuse and other neuropsychiatric disorders. In essence, my work-life and family-life often parallel, with many tenets I teach my children finding applicability in scientific success.

With regard to being a woman scientist, I have certainly experienced my own set of barriers and made choices that have provided their own set of challenges. We all have our stories. The goal that I have always set for myself is to achieve a balance with family time, focused work in the lab, attentiveness to the people around me, and maintaining the thrill that keeps me going on all fronts. Having a sense of humor helps too! My husband is also an NIH scientist and thus we can provide valued support to one another. I believe as a wife and mother, my enthusiasm for what I hope to achieve career-wise is not only infectious to my children, but has provided them with a model that, although imperfect in many ways, is achievable. I believe that the members of my lab and my colleagues also appreciate this model, although I'm sure my lifestyle has scared away a few. The fact is that every woman who has worked in my lab, either as a postdoc, postbac, or summer student has remained in science or medicine. Many are married. Some have children of their own. Even my own eldest daughter, who is attending Penn in the fall, has every intention of pursuing a challenging career—in science? Who knows?

Toni Shippenberg, Ph.D.

Chief, Integrative Neuroscience Section, Behavioral Neuroscience Branch, Intramural Research Program

EDUCATION

Ph.D.: (Pharmacology)
Baylor College of Medicine, 1985

B.S.: (Neuroscience)
Colgate University, 1979

RESEARCH INTERESTS

My research program uses cellular, neurochemical, and behavioral approaches to identify alterations in brain function that contribute to the pathophysiology of addiction in order to identify effective therapeutics for the treatment of addiction and novel targets for the treatment of persistent pain resulting from inflammation and nerve injury. Our studies have shown that tonically active and functionally opposing opioid systems regulate a circuit in the brain upon which natural rewards and drugs of abuse act to motivate behavior. Working with other laboratories, we have identified the neural substrates upon which cocaine and other drugs of abuse act to disrupt the regulatory activity of this circuit.

PIVOTAL EVENTS

As an undergraduate, I became fascinated by the discovery of naturally occurring opioids in the brain. Five years later, Ph.D. in hand, I applied for a postdoctoral fellowship in the laboratory of Dr. Albert Herz, a pioneer in opioid research, at the Max Planck Institute for Psychiatry in Martinsried, Germany. My postdoctoral research experience was unique. Fellows were expected to work 7 days a week and female scientists were a rarity. With no time to take a formal language course, German was learned after leaving the lab and heading to the nearest beer garden for a later dinner and scientific discussions. My mentor, however, gave fellows the rare freedom to follow their scientific hunches wherever they might lead. This freedom enabled me to build an independent research group examining how dysregulation of endogenous opioid systems contributes to drug and alcohol addiction, an interest that continues to this day. After a 3-year postdoc and the birth of my daughter, I was appointed Chief of the Drug Abuse Unit at another Max-Planck Institute. There, I learned how to build a laboratory from scratch, write grants, and navigate a system in which foreigners and female scientists were few. Three years later, after having finally learned German, and having suffered and recovered from a broken neck, I was recruited to the NIDA Intramural Research Program (IRP) to lead a research program on opiate addiction.

MENTORING & WORK/LIFE BALANCE

An important aspect of my career has been the ability to mentor other scientists. My postdoctoral mentor gave me the freedom to pursue my love of science. My laboratory is guided by this same principle. I believe that such freedom is essential for scientific growth of both the student and mentor. In addition to supervising doctoral students and postdoctoral fellows, I am a mentor for the NINDS Specialized Research Initiative in Neuroscience (SNRP), a program that supports neuroscience research at underprivileged medical institutions. As a mentor and scientific advisory board member, I work with scientists at various stages of their careers; providing guidance in developing an independent research program.

Pursuing a career in science has not been easy. As a woman, the need to balance family and career is always present. Importantly, however, the juggling makes one more attuned to the difficulties facing younger scientists. As a single mother, who battled cancer and survived a broken neck, achieving the balance between career, family, and health has often been difficult. The joy and satisfaction that I have experienced as a scientist and mother are unsurpassed. I am paid to solve puzzles of my choosing. My daughter is entering college and even after having had to listen to too many of my talks, she is considering a career in medicine.

INSIGHTS

A career in science can be challenging. It is not without frustrations and long hours. When I entered science, it was still a predominantly male profession. I remember sitting at scientific sessions and counting the few number of females in a room. Although the glass ceiling still does exist, we have made many strides. In 1996, I was the first woman to be awarded the young investigator prize by the College on Problems of Drug Dependence. Since that time, several women scientists have received the award. Recently two women scientists were recognized by the Society of Neuroscience and the American College of Neuropsychopharmacology for their contributions to the addiction field. Previous awardees had all been men. Although the number of women scientists is increasing, it is essential that we gain positions where we can affect scientific policy and help others build successful careers. I have chosen to do this by serving as an editor of several journals, participating in scientific advisory boards, and serving on various study sections both in the United States and abroad. Although these activities have added to my workload, they have improved my science, introduced me to colleagues who have become lifelong friends, and allowed me to develop scientific collaborations that would not otherwise have been possible.

Amina Sarah Woods, Ph.D.

Tenure-Track Investigator, Cellular Neurophysiology Section, Cellular Neurobiology Research Branch, Intramural Research Program

EDUCATION

Ph.D.: (Pharmacology)
The Johns Hopkins University School of Medicine, 1992

M.S.: (Pathology)
University of Maryland Medical School, 1975

B.S.: (Chemistry)
Loyola College, 1972

RESEARCH INTERESTS

Application of bioinformatics, modeling and mass spectrometry to study structure and elucidate the mechanisms of dynorphin-mediated NMDA neurotoxicity and receptor heteromerization

PIVOTAL EVENTS

After obtaining an M.S. in pathology in 1975 and taking a break to raise a family, I joined the clinical pharmacology laboratory at The Johns Hopkins University School of Medicine where I set up biochemical assays to evaluate new therapeutic compounds. My interest in structural biology started in 1986 when I spent time in Dr. Gertrude Elion's laboratory working on Acyclovir and AZT, the first antiviral drugs designed with structure in mind. She explained that to design successful therapeutic agents, one should first study their targets' structure, as function is determined by structure and conformation. Two years later, at the age of 45, I went back to graduate school, where I characterized viral proteins and when conventional methods fell short, learned mass spectrometry (MS) to solve the problem at hand and study biomolecular interactions. After graduating in 1992, I joined the Oncology Department at Johns Hopkins. During my fellowship, I tackled MHC class I peptides purification and sequencing. Isolation of CD1d1ligand led me to identify the first lipid MHC ligand, which reinforced my belief in the structural importance of all biomolecules.

MENTORING & WORK/LIFE BALANCE

As a Ph.D. graduate student and during my fellowship, most of my classmates, but particularly young women, came to me for advice and support, and told me that my going back to school after raising a family reinforced their belief that women could have both a good family life and a successful career. I believe that in addition to perseverance, my success in science was due to the support of my family, especially my husband who

always encouraged me to choose the path that satisfied my intellectual curiosity, regardless of the financial burden, and my colleagues, particularly women who encouraged me to persevere, regardless of my age. I have tried to give back what I have received by always being available to help all students and colleagues in mapping a path to scientific success, and trying to convince young women that they have a future in science, and that taking a break after college does not necessarily prevent one from going back to graduate school. I always feel a thrill when I participate in scientific meetings to see that I am not anymore one of the few, but rather one of the many women present.

INSIGHTS

In the past two decades, I have published over 100 papers (citation index 3900), mostly pertaining to structural work; obtained a patent for a peptide drug; was appointed to the editorial board of the *Journal of the American Society for Mass Spectrometry*; and was elected to the post of Secretary of the American Society for Mass Spectrometry.

I obtained my M.S. in 1975, and returned to graduate school in 1988, at the time I was 45 years old. I have done my best and most creative work in my late 50s and early 60s. I was 64 on July 22, 2007, still looking forward to developing new concepts and never felt younger.

Lula Andrea Beatty, Ph.D.

Director, Special Populations Office, Office of the Director

EDUCATION

Ph.D.: (Developmental Psychology) Howard University, 1989

A.B.: (Psychology) Lincoln University, 1971

RESEARCH INTERESTS

I am interested in research that focuses on strength and resiliency, to understand how people and groups are able to function and sometimes thrive in stressful, less-than-optimal conditions. I am also interested in intervention and translational research that focuses on structural factors that can reduce addiction-related health problems and other drug-related outcomes in racial/ethnic minority populations, e.g., HIV/AIDS, criminal justice involvement.

PIVOTAL EVENTS

Attending Lincoln University was the most critical event in my professional and personal development. I entered at a time of exciting change in the country and at the university. Lincoln, a historically Black college in Pennsylvania, had been all male. I was recruited as part of an effort to increase representation of women and Southern students. I went not knowing that very few women attended, that the male-to-female ratio was about 7 to 1. I entered the newly created 13 Colleges program, a program to establish "a new curriculum" for college studies. There was pressure to achieve as women and Southerners. Everything was demanding—the coursework, faculty, fellow classmates. I learned to cope with change and resistance to change, to embrace diversity, and to think and question. I was given many, varied opportunities that included working as a teaching assistant, and doing a residential clinical practicum in a mental hospital as a "January Project." I was encouraged to pursue a graduate degree and to try to make a difference.

MENTORING & WORK/LIFE BALANCE

In the early years of my career, I sometimes had to make choices between what was good for my academic/professional career and what was good for my child and family, e.g., extended travel, availability on demand. I almost always chose my family. This slowed my early professional growth a bit. Some of my earlier advisors/mentors were not sensitive to the concerns of women and believed that one had to adjust to the model in place. Changing the model didn't seem to be an option, especially if you were a woman of color. Some of these inherent biases are still in place. We must make sure that people mentoring women are aware of some of the limitations they face, especially in academia, and we must develop program, institutional, and personal strategies to ensure that women succeed without having to make unnecessary sacrifices.

Christine M. Colvis, Ph.D.

Director, Program Integration, Office of the Director

EDUCATION

Ph.D.: (Biochemistry and Molecular Biology) Oregon Health Sciences University, 1998

A.B.: (Biochemistry) Illinois Benedictine College, 1990

RESEARCH INTERESTS

Although the diseases I have studied have varied, my research interest has consistently been in biochemistry and protein chemistry. I continue to be fascinated with nature's molecular machines, including how they are created, regulated, and find the appropriate location in a cell or organism for their activity. Biology continues to surprise and impress me at every turn. My broad scientific interest is well-suited to my work as a program director, a position that affords me the opportunity to catalyze research in exciting new areas and follow ongoing research in some more established areas.

PIVOTAL EVENTS

After receiving my Ph.D., I came to the NIH to postdoc at the National Eye Institute, where I trained for 3 years under Dr. Donita Garland. With outstanding support and mentorship from Dr. Garland, I was able to quickly gain recognition in the field of proteomics as well as cataract research and was promoted to research fellow. I also became the basic science co-chair of the NIH Fellows Committee. In 2001, I joined NIDA as a program director and with strong support from the Institute, was able to establish two neuroproteomics research centers. In 2008, I assumed the role of NIDA's Director of Program Integration.

MENTORING & WORK/LIFE BALANCE

Throughout my own training and career, I have worked with students and postbaccalaureate women, presenting them with challenging, but achievable goals while helping them identify a career that best suited them. I have also participated in science and career fairs for all ages, from grade school to postdoctoral trainees. While working in vision research, through outreach programs, I would teach children in local grade schools about vision and the anatomy of the eye. I have received numerous awards, including Director's Awards from two NIH Institutes as well as two NIH Director's Awards. I attribute my success to my family, teachers, mentors, and superiors who have encouraged and supported me and continue to do so today.

Lucinda L. (Cindy) Miner, Ph.D.

Deputy Director, Office of Science Policy and Communications, Office of the Director

EDUCATION

Ph.D.: (Psychology) University of Colorado, 1986

M.A.: (Psychology) University of Colorado, 1983

B.A.: (Psychology) University of Colorado, 1980

RESEARCH INTERESTS

Behavioral, molecular genetics and behavior analysis

PIVOTAL EVENTS

I completed my degree in psychology with an emphasis in behavior genetics at the University of Colorado. Following that, I finished two postdoctoral fellowships at the University of Minnesota and the University of Pittsburgh to become grounded in protein analysis and molecular neurobiology. While this transdisciplinary training laid the groundwork for research I conducted for NIDA's intramural program, it also prepared me for my current position guiding NIDA's outreach and communications efforts.

Prior to joining the Office of Science Policy and Communications (OSPC), I worked as a research scientist in NIDA's Intramural Research Program in Baltimore, Maryland. There, I helped to establish the Molecular Genetics Section and served as its first Acting Branch Chief. During that time, I was able to fully integrate my two primary scientific interests: molecular genetics and behavior analysis. Having a broad scientific base and an ability to clearly communicate complex information to diverse audiences have helped me to achieve my current position at the NIH, working at the forefront of addiction science.

MENTORING & WORK/LIFE BALANCE

As the Deputy Director of OSPC, my main responsibility is to oversee the coordination of NIDA's legislative, constituent, research training, science education, and press outreach activities, as well as the Institute's research planning and evaluation efforts. In this role, I have many opportunities to mentor the largely female staff who comprise NIDA's research communications team, and to influence the many audiences they reach—students, teachers, health professionals, the lay public, and more—with NIDA's important public health messages on drug abuse and addiction.

NIDA

Marisela Morales, Ph.D.

Tenure-Track Investigator, Cellular Neurophysiology Section, Cellular Neurobiology Research Branch, Intramural Research Program

EDUCATION

Ph.D.: (Cell Biology) Universidad de Guanajuato, Mexico, 1985

M.S.: (Cell Biology) Universidad de Guanajuato, Mexico, 1982

B.S.: (Biochemistry and Microbiology) Instituto Politecnico Nacional, Mexico, 1977

RESEARCH INTERESTS

Molecular and cellular pathways that mediate physiological and behavioral responses to drugs of abuse

PIVOTAL EVENTS

My interest in neuroscience began as a postdoctoral fellow at The Scripps Research Institute in the laboratory of Dr. Floyd Bloom. During my training, I discovered specific patterns of cell expression of genes encoding serotonin receptors. This work led to my current research investigations at NIDA on the molecular and cellular pathways that mediate physiological and behavioral responses to drugs of abuse. In these studies, we use a wide range of tools from the fields of molecular and cellular biology to identify neuronal networks implicated in these responses. Results from clinical studies and experimental animals provide evidence indicating that behaviors associated with intake of drugs of abuse are affected by stress. For example, we recently discovered that neurons producing the stress-mediated molecule corticotropin-releasing factor make synaptic contacts with dopaminergic neurons of the ventral tegmental area; these dopaminergic neurons are known to play an important role in motivation and reward. Our identification of a novel interaction between the stress system and reward system provides a new and exciting direction for future studies of how drugs of abuse modify this interaction and affect brain functions and, ultimately, human behavior.

MENTORING & WORK/LIFE BALANCE

As a mentor, I encourage promising young scientists to remain focused, informed, and persistent in achieving their long-term goals, while providing them with key information and guidance on scientific methodology, knowledge, and culture. I have successfully nurtured the development of a number of promising students, postdoctoral fellows, and technicians during my scientific career. These activities have afforded me great personal satisfaction in helping others achieve their scientific career goals.

My successes in research derive from an abiding passion for science and dedication to the profession. They would not have been possible without the encouragement and support of my wonderful colleagues at NIDA and elsewhere who have generously provided me over the years with valuable advice, reagents, and assistance. This support has been instrumental in developing a research program at NIDA that is at the forefront of my field.

At times it can be challenging juggling the joint responsibilities of being a scientist, wife and mother. Fortunately I have a scientist–husband and teenaged son who often assume key domestic duties while providing unwavering moral support. Therefore in my case, efforts to balance professional and personal responsibilities rely deeply on the understanding and support of my family.

Lisa Onken, Ph.D.

Chief, Behavioral and Integrative Treatment Branch and Associate Director for Treatment, Division of Clinical Neuroscience and Behavioral Research

EDUCATION

Ph.D.: (Clinical Psychology) Northwestern University, 1981

B.S.: (Psychology) Tufts University, 1976

RESEARCH INTERESTS

My main research interest is on developing treatments for people who are experiencing psychiatric and drug use disorders. I am particularly interested in the relationship between behavioral interventions, behavioral change, and biology, and in understanding how to promote positive behavioral changes. The relationship between sleep, circadian rhythms, and behavior is also of interest, particularly as it relates to drug abuse and mental health treatment.

PIVOTAL EVENTS

As a clinical psychologist, I have worked with many skilled, dedicated psychotherapists who helped their patients learn how to thrive. But I have also witnessed times when patients were not as well-served. Seeing the plight of some patients—especially while knowing how powerful and positive psychotherapy could be for others—played a pivotal role in my life. As a therapist, I

knew that top-notch treatment could make all the difference in a person's life, but it wasn't always provided. As a researcher, I believed that to maximize the likelihood that people receive top-notch treatment, the treatment must be defined, scientifically studied, and proven to work. At NIH it has been possible to create a program of research that supports the development and testing of effective treatments for people in need, with the ultimate goal of providing all patients with outstanding treatment.

MENTORING & WORK/LIFE BALANCE

I have had the privilege of working with and mentoring many young women with careers in clinical science who have made great contributions to public health. As a health scientist administrator, but also as the mother of two young women, I am especially concerned with supporting the career development of promising young women.

Balancing a career in science with a family is extremely difficult, but it can be done—especially if one has a supportive work environment, and a supportive spouse. I urge women to consider where, when, and how to place limits on themselves. More specifically, I believe that placing limits on what one aims to accomplish on any given day is a necessity, or there will be no balance. However, placing limits on one's vision of what one can accomplish in a lifelong career in clinical science would be a disservice not only to oneself, but to the public's health.

I'd like to thank my parents for not placing limits on what their daughters could achieve, my spouse for supporting me every step of the way, and my children for helping me keep a balance by showing me what really matters.

Kenzie L. Preston, Ph.D.

Chief, Clinical Pharmacology and Therapeutics Research Branch, Intramural Research Program

EDUCATION

Ph.D.: (Pharmacology) University of Illinois at Chicago, 1982

B.S.: (Pharmacy) University of Illinois at Chicago, 1976

RESEARCH INTERESTS

Investigating combined pharmacological and behavioral treatments for polydrug abusers (especially cocaine and heroin abusers), identifying individual characteristics and environmental factors that influence drug taking and response to treatment, and investigating the causes and prevention of relapse

PIVOTAL EVENTS

A pivotal decision that shaped my career and success as a scientist was my choice of pharmacy for my undergraduate training. Pharmacy school gave me a sound foundation in the sciences as well as clinical experiences that paved the way for a career in clinical research. It didn't hurt that it paid well as part-time employment during graduate school. A second pivotal event was my decision to switch from laboratory-based studies to applied clinical research. Taking the chance to try a new research direction stretched my abilities and gave me a fresh start in the middle of my career.

MENTORING & WORK/LIFE BALANCE

The major positive influence on my career was that of my mentors, who taught me good science and supported my career development while also serving as good models for my own future role as a mentor. One of the most satisfying aspects of my experiences as a scientist is seeing undergraduate students accepted into graduate school and fellows develop into full-fledged members of the scientific community. My mentors also modeled the importance of having a full life outside of the laboratory and balancing family and professional responsibilities. I hope that through my own career, I can do the same for other women.

Joni L. Rutter, Ph.D.

Associate Director for Population and Applied Genetics, Division of Basic Neuroscience and Behavioral Research

EDUCATION

Ph.D.: (Pharmacology and Toxicology) Dartmouth Medical School, 1999

B.S.: (Biology, minor in Chemistry) Eastern Nazarene College, 1991

RESEARCH INTERESTS

I am now actively involved in oversight and continued development of human genetics and genomics research at NIDA where I am responsible for providing leadership in planning, developing, directing, and evaluating NIDA's programs related to human genetics research. I am particularly interested in human genetics as it relates to other areas of science, such as pharmacogenetics, epigenetics, and bioinformatics. I am also interested in how our genes interact with how we develop and how we respond to the environment.

PIVOTAL EVENTS

Throughout my career, I have received several awards, including a Fellowship Achievement Award (NCI) and a Janssen Research Foundation Young Investigator Award, and some of my accomplishments include coidentifying and cloning the Neurofibromatosis Type-2 gene, patenting my graduate work on the matrix-metalloproteinase-1 gene, and coediting a book entitled, "The Cell Biology of Addiction." I can recall three times where I felt like there was an "Ahha!" moment; they were important because of the long-lasting rewarding effects they had on me, and they continue to drive my love for science in search of the next moment. Importantly, there have been a series of key opportunities, and the pivotal events for me have been in recognizing those opportunities and running with them. For example, picking my mentor/advisor in graduate school was critical. She had the most indelible influence on my scientific career. I still hear her voice when I write and when I interpret results. I am also proud to serve with one of a few female NIH Institute Directors, who leads by example and expects nothing less than your best.

MENTORING & WORK/LIFE BALANCE

I came from a rural town in Kansas with a mother who fearlessly paved her own way and a father who encouraged me to aim high. However, it was my father's business partner, a strong, successful, brilliant woman who inspired me the most. She instilled in me the understanding and belief that a woman's passion can and should be followed as well as the knowledge and confidence that I could be anything I wanted to be. I am thankful for scientists, such as Rosalind Franklin, who eased my path in the world of women in science. Although, the gender gap in science still exists, it is narrowing. As years pass, I recognize that I am increasingly surrounded by female colleagues. Mentoring is important to me not only because of what it has meant to my own career, but because it also provides an opportunity for me to facilitate professional and personal growth as others have guided me. I encourage my students and colleagues to keep an open mind about where a path may lead.

Balancing family and career is a daily challenge. The fulcrum for me is a partner who loves me, shares my vision, supports my ambition, and keeps me grounded. Because of this, I have the fulfillment of following my passion and I am honored to be recognized as a woman in science at NIH.

Betty (Chung-Yui) Tai, Ph.D.

Director, Center for Clinical Trials Network

EDUCATION

Ph.D.: (Physiology/Pharmacology) George Washington University Medical School, 1982

M.S.: (Genetics) University of Massachusetts, 1970

B.S.: (Zoology) National Taiwan University, 1967

RESEARCH INTERESTS

I acquired my training and experience in research at leading laboratories at Yale University, George Washington University, and intramural NIH in the substantive areas of cell biology (microscopy, autoradiography), cell physiology, cellular endocrinology, and membrane transport of electrolytes and weak electrolytes across epithelia and blood–brain barriers. My research on the kinetic approach of weak electrolytes transport guided my interests toward the application of pharmacokinetics and pharmacodynamics to translational research from animal to man. My current research interests relate to the broad topic of "translational research"—mostly from clinical research to clinical care with a specific focus on the exploration of innovative clinical trial methods that can enhance the relevance of research results to clinical care.

PIVOTAL EVENTS

The most pivotal decision that has led my career path has been the desire to stay in the Washington, DC, area with my family. This decision provided me the opportunity to explore the wealth of scientific career opportunities in the Federal Government that go beyond hands-on laboratory or clinical research. Through these opportunities, I have learned and appreciated the significant role of being a Federal health science administrator: just as a group of accomplished musicians can be transformed into a great orchestra by a skilled conductor, a team of talented scientists can also be coordinated to generate significant contributions to impact public health by a program director with vision. Also pivotal to my career are the many great mentors I have had. These mentors have provided me with the necessary guidance and encouragement throughout my professional life to develop my own skills and, more importantly, to be a mentor to others.

MENTORING & WORK/LIFE BALANCE

I am married to a biomedical researcher and have two grown children. Admittedly, the biggest challenge for me has been maintaining the priorities and balance between my family and professional responsibilities. For this, I acknowledge my family: the understanding and willingness of my husband to share family responsibilities has enabled me to focus on my professional pursuits. The willingness of my children to learn about my work and to appreciate the importance of and the pride that I take in my work have also enhanced the satisfaction and happiness I have gained through my professional pursuits.

Susan R. B. Weiss, Ph.D.

Chief, Science Policy Branch, Office of Science Policy and Communications, Office of the Director

EDUCATION

Ph.D.: (Psychology)
University of Maryland, 1982

M.S.: (Psychology)
University of Maryland, 1978

B.A.: (Psychology) State University of New York at Stony Brook, 1975

RESEARCH INTERESTS

My varied research interests include addiction and other mental health disorders. As chief of the Science Policy Branch for the National Institute on Drug Abuse, I help infuse the latest science advances and health information into strategic planning, public education, and other outreach efforts aimed at stopping drug abuse and addiction—an urgent public health problem. The scientific research underlying these efforts focuses on how drugs of abuse interact with other influences—environmental, genetic, and neurochemical, to name but three—to alter the brain and behavior, and make some individuals more vulnerable than others to drugs' harmful effects. There is still so much to learn about these topics, making the neurobiology of drug abuse a fascinating scientific frontier where important discoveries are being made every day.

PIVOTAL EVENTS

My mentor and collaborator at NIMH, Dr. Robert Post, played a pivotal role in my development as a scientist and an individual. After receiving my doctorate in biopsychology, I took a position in Dr. Post's laboratory, which was dedicated to understanding and treating bipolar disorder. I originally had considered this job as perhaps a transitional one, and that I might later go to medical school. However, the excitement of working at the forefront of this important area and the thrill that accompanies scientific discovery were so compelling that I remained in the Biological Psychiatry Branch for 18 years. Dr. Post created an environment that welcomed questions and fostered curiosity and creativity. Moreover, this was truly a translational research environment, in which basic and clinical science continually informed each other and guided the research program. Through this collaboration, I was able to expand and develop my research interests, and interact with other clinician scientists throughout the world. Most importantly, however, I had the opportunity to work closely with and learn from a superb and uniquely innovative scientist and clinician, who showed me a new paradigm defining the qualities most important for success.

MENTORING & WORK/LIFE BALANCE

During my time at NIMH, I have mentored over 40 students and postdoctoral fellows, most of whom have gone onto successful careers in research and/or medicine. In my current position at NIDA, I supervise a dozen staff members working on various aspects of drug abuse and addiction, such as conducting outreach and education programs for elementary school students, overseeing the training of young scientists and new grantees, and preparing scientific and policy communications for members of Congress and the public. In all these roles, I provide mentoring and direction to help staff attain the knowledge and self-sufficiency to effectively fulfill NIDA's important mission.

I am fortunate in having a spouse who is also a scientist and who can share my intellectual and personal interests, who supports me in both, and who understands the demands of this career. My family life is a source of great happiness, and my professional life is deeply gratifying. This I have no doubt is possible only because of the extraordinary people in both.

Cora Lee Wetherington, Ph.D.

Women and Sex/Gender Research Coordinator, Office of the Director; Program Officer, Behavioral and Cognitive Science Research Branch, Division of Basic Neuroscience and Behavioral Research

EDUCATION

Ph.D.: (Experimental Psychology) University of North Carolina, Greensboro, 1976

M.A.: (Experimental Psychology) University of North Carolina, Greensboro, 1972

B.A.: (Psychology) University of North Carolina, Greensboro, 1969

NIDA

RESEARCH INTERESTS

I have two positions at NIDA. As NIDA's Women & Sex/Gender Research Coordinator, I engage in activities aimed at promoting, infusing, and integrating the study of women and sex-gender differences into all areas of drug abuse research. As a program officer in NIDA's Behavioral Sciences Research Branch within the Division of Basic Neuroscience and Behavioral Research, I develop and oversee a program of extramural research focusing on a variety of animal and human laboratory topics, including vulnerability to drug abuse, the behavioral effects of exposure to drugs across lifespan development, and, of course, sex-gender differences and issues unique to females.

PIVOTAL EVENTS

As I read Mitch Albom's *The Five People You Meet in Heaven* a few years ago, it evoked for me, and probably most readers, thoughts about how our everyday interactions with people can be pivotal in changing the course of our life, and that oftentimes we realize it only in retrospect. That has been the case for me both educationally and professionally. I think, for example, about my kind high school guidance counselor who took it upon herself to make sure I applied for scholarships and other funding, without which I probably would not have gone to college. And the psychology college professors whose influence shifted my interests from clinical psychology to experimental psychology. And the graduate school professors who provided me with a naturalistic conception of behavior and who taught me about the nature of scientific inquiry. And the graduate school mentor who helped me to obtain an academic position straight out of graduate school. And the NIH representative at a grantsmanship workshop who gave me crucial advice and encouragement that, as a young assistant professor, resulted in my receiving an NIH-funded grant. These are just a few of the individuals who were pivotal early in my career and to whom I am grateful. The list continues and continues.

MENTORING & WORK/LIFE BALANCE

Throughout my career, first as a university professor and then here at NIDA, I have received immense satisfaction from mentoring young investigators, perhaps in part because of the importance such mentorship has played in my own career. I am grateful to teachers, colleagues, family, friends and others—both men and women, scientists and nonscientists—who have inspired, encouraged and challenged me in my scientific development. I find that trying to return that mentorship to others is very satisfying.

Balancing family and professional responsibilities is often challenging, but helps to make life exciting, and I am grateful to my husband who is a professor/scientist and to our two college-student children for their support.

National Institute of Environmental Health Sciences

Donna Day Baird, Ph.D.

Senior Investigator and Head, Women's Health Group, Epidemiology Branch, Environmental Diseases & Medicine Program, Division of Intramural Research

EDUCATION

M.P.H.: (Epidemiology) University of North Carolina, 1984

Ph.D.: (Evolutionary Ecology) University of Minnesota, 1980

B.A.: (Biology) Macalester College, St. Paul, Minnesota, 1968

RESEARCH INTERESTS

Reproductive epidemiology, uterine fibroids, fertility, epidemiologic methods

PIVOTAL EVENTS

I became an epidemiologist through a circuitous path: biology undergraduate, Ph.D. in evolutionary ecology, and then the epidemiology training in an M.P.H. program. The biological, evolutionary base is critical in my work. Then, of course, there are the mentors and colleagues. Dr. Herman Tyroler's course in cardiovascular epidemiology helped me integrate biological mechanisms with conceptual models of epidemiologic risk, something I try to do both in study design and analysis. My long-term collaboration with Dr. Clarice Weinberg and Dr. Allen Wilcox continues to stimulate new ideas and push me to clearer thinking. Dr. Darlene Dixon started me studying uterine fibroids, which is now one of my major interests.

MENTORING & WORK/LIFE BALANCE

I adopted a 10-week old as a single mom in 1986, so much of my career at NIH has required balancing those responsibilities with professional responsibilities. I feel that each got short-changed at times in the past, and still do. It is challenging with no perfect path. I'm just glad to be balancing imperfectly.

INSIGHTS

Finding reproductive epidemiology was my biggest career milestone. As a biology graduate in 1968 who did not want to be a doctor, I had limited career options. It was still a very male-dominated world. Despite getting the highest Graduate Record Examinations (GRE) scores in the department that year, my advisor suggested junior college teaching. It was over a decade later that I discovered epidemiology. I was offered an NIH traineeship, but not in the field I wanted, reproductive epidemiology. I decided not to take it, but to go unfunded to the School of Public Health at the University of North Carolina

(UNC) where I could work part-time with Allen Wilcox at NIEHS. This marked the first career-assertiveness move of my life, and did it ever pay off. I got terrific training at UNC and was offered a job as a reproductive epidemiologist at NIEHS where I study fertility, early pregnancy, and uterine fibroids. My challenge has been to keep the clarity about doing what I love. The stress of tenure review paled when I focused on having research that excited me. I still need to say, "No" more, but mostly the aspects I need in my work are there: 1) public health significance, 2) fascinating biology, 3) challenging methodology, and 4) colleagues I respect and enjoy.

Marilyn Diaz, Ph.D.

Tenure-Track Investigator, Somatic Hypermutation Group, Laboratory of Molecular Genetics, Environmental Biology Program, Division of Intramural Research

EDUCATION

Ph.D.: (Evolution & Population Genetics) University of South Carolina, 1995

M.S.: (Genetics & Developmental Biology) West Virginia University, 1988

B.S.: (Biology) University of Miami 1986

RESEARCH INTERESTS

Immunoglobulin hypermutation, memory B cell responses, autoimmunity

PIVOTAL EVENTS

I consider the mentoring throughout my career, even as an undergraduate, to be the single most important factor that influenced my development as a scientist. Having trained in one field (evolutionary biology) and then switched to a completely different one (immunology) also had a tremendous impact on my career because it helped shape my interdisciplinary approach to scientific research.

MENTORING & WORK/LIFE BALANCE

As I mentioned above, the mentoring that I have received throughout my career has been pivotal to my success. By witnessing and participating in their enthusiasm for science, my mentors often reminded me of my passion for science and research, even in times when things were not going well in the laboratory.

INSIGHTS

As a graduate student in ecology and evolution, my advisor, from the very start, encouraged me to think and act independently in my scientific pursuits. As a result, I directed a large, multiyear population genetic analysis of fish populations throughout the United States. This meant that I had to help coordinate various groups such as technicians from my laboratories, scientists from State agencies, and even local fishermen for the collection of samples and analysis of landlocked and anadromous fish populations. At first, some of these individuals were skeptical of a young woman directing local fisherman to collect samples, for instance, and this was difficult. However, in time I gained their respect by staying focused, professional, and knowledgeable. At the end, I not only learned how to study the genetics of a natural population, but more importantly, I learned how to coordinate a large effort involving many individuals and multiple agencies, each with different personalities, preconceived notions, etc.

When I graduated, I wanted to explore biomedical research, and was able to bridge my background in evolution with immunology by examining adaptive immune responses in cartilaginous fish and its relevance to the evolution of the adaptive immune system. This enabled me to utilize my background in evolutionary biology in shaping my thinking and hypothesis generation in biomedical research, an approach that I still maintain to this day. The combination of mentors who encouraged and respected my development as an independent scientist and fostered my enthusiasm for scientific research, along with multidisciplinary training that has shaped my approach to hypothesis generation, have been the best contributors to my career as a scientist.

Gaylia Jean Harry, Ph.D.

Head, Neurotoxicology Group, Laboratory of Neurobiology, Environmental Biology Program, Division of Intramural Research

EDUCATION

Ph.D.: (Psychopharmacology/Experimental Psychology) Virginia Commonwealth University, 1981

M.S.: (Psychology/Experimental/Physiological Psychology) Virginia Commonwealth University, 1977

B.S.: (Psychology) Virginia Commonwealth University, 1974

RESEARCH INTERESTS

Interactions between cells within the nervous system that contribute to damage and repair processes including inflammatory-mediated responses in the brain and the additional influence of peripheral immune cells; the contribution of neuroinflammation and microglia response in injury and injury-induced neurogenesis as examined within the context of development and aging, and the impact of environmental exposure and age

PIVOTAL EVENTS

The pivotal events that have had the most effect on my scientific career are related to the choice of advisors, colleagues, and projects. Identifying those that would challenge, promote independence, facilitate success, minimize failure, and throughout extend a level of respect has served me well and has had the greatest effect on my success as a scientist and personal development.

MENTORING & WORK/LIFE BALANCE

During my scientific career, critical mentoring has not been readily offered from scientists; however, such mentoring has been successfully elicited. This has been mostly in the form of science mentoring and from male scientists. Mentoring within personal career development has been elicited from both males and females in professions outside of bench science and has provided a breadth and additional depth of advice. Increased involvement in professional activities has allowed for contact with established women scientists; presenting opportunities for mentoring-type activities, suggesting a greater availability of women scientists to serve in a mentor role and an understanding of the need for mentoring at multiple levels. The most influential mentors were personally identified and their role continues over an extended period of time throughout a career. For me, successful balancing of family with professional responsibilities has been dependent upon the partner and the strength of the family relationships.

INSIGHTS

It is important to remember that, regardless of expectations, no one has your interest at heart, other than yourself. Your priorities are just that, yours, and not necessarily those of another. Thus, in all cases where a decision or opportunity occurs that may have an effect on you and your career, you must obtain all information possible and not rely on the good will and support of others.

Dale P. Sandler, Ph.D.

Chief, Epidemiology Branch, Environmental Diseases & Medicine Program, Division of Intramural Research

EDUCATION

Ph.D.: (Epidemiology)
The Johns Hopkins University, 1979

M.P.H.: (Chronic Disease Epidemiology)
Yale University, 1975

B.A.: (Mathematics and Philosophy)
Boston University, 1972

RESEARCH INTERESTS

My research interests include risk factors for chronic kidney disease, leukemia, lung cancer, breast cancer, women's health, and health effects of radon and agricultural exposures. I partnered with the National Cancer Institute and the Environmental Protection Agency to develop the Agricultural Health Study, a prospective study of the health of licensed pesticide applicators and their families, now in its 11th year and am the Principal Investigator of The Sister Study, which is designed to identify environmental and genetic causes of breast cancer and other diseases in women.

PIVOTAL EVENTS

Epidemiology requires practical skills as well as subject matter expertise. I was fortunate to do my dissertation under two outstanding epidemiologists with field experience—Dr. Genevieve Matanoski and Dr. George Comstock. I obtained a grant to study health consequences of nasopharyngeal radiation that allowed me to hire and supervise a small staff that knew more than I did about data collection and learn firsthand how to carry out a field study. My first job, at the NIEHS, was in a fledgling program. Along with two other new hires and a colleague with a 2-year head start, we were charged with building a program. It was slow going, but I successfully built the resources needed to sustain an epidemiology program. Being an editor at two top epidemiology journals (*American Journal of Epidemiology and Epidemiology*) exposed me to research and methods outside my immediate area and also helped to attract outstanding younger researchers to our program.

MENTORING & WORK/LIFE BALANCE

While I received good advice as a student, I can't say that I had a mentor in the way that new investigators currently conceive of mentoring. I did have some role models in professors I especially admired. Our little group of four beginners at NIEHS

mentored each other and made our own opportunities. I benefited greatly from the collegial and noncompetitive atmosphere in our group. NIH was not very friendly to women or to mothers when I started, but there was enough flexibility during the work week to make it possible to balance the needs of home and work. It was especially helpful to have a husband, also a professional, who did his share taking care of the children (2 boys, now 21 and 26) and home. I also learned early on that it is important to focus on what really matters.

INSIGHTS

Epidemiology is a field that attracts a lot of women. But, at least when I started, the NIH was not a place with women in leadership positions. While there were some instances when I felt that I wasn't treated fairly, I was fortunate to have the support of my peers. I also was fortunate to find really smart colleagues and collaborators. Working with biostatisticians who were at the cutting edge of epidemiologic methods enabled me to carry out research using innovative study designs, and being located in what was largely a laboratory-based environment encouraged me to think more about plausible biological mechanisms for observations at the population level.

My most rewarding experience to date has been enrolling women from across the United States and Puerto Rico for The Sister Study. The study involves women at higher risk for breast cancer because of their family history. At enrollment, participants contribute data and biological and environmental samples and agree to be studied over the next 10 or so years. They are excited to be part of this national study as a way to honor their sisters who had breast cancer and to be part of an effort that might someday lead to preventing breast cancer in future generations of women. This is the first time that, no matter where I go, I meet someone who has heard about the study, knows someone in it, or has joined. I am used to studying groups of patients and controls known to me only by ID numbers. Through this study I've gotten to meet individual participants who contact me. I know I can't guarantee finding genetic or environmental factors that contribute to breast cancer, but seeing how much participants have invested in being part of the study, I would hate to let them down.

Clarice R. Weinberg, Ph.D.

Chief, Biostatistics Branch, Environmental Diseases & Medicine Program, Division of Intramural Research

EDUCATION

Ph.D.: (Biomathematics) University of Washington, Seattle, 1980

M.A.: (Mathematics) Brandeis University, 1974

B.S.: (Mathematics) Simmons College, 1972

RESEARCH INTERESTS

Methods in epidemiology, particularly reproductive epidemiology; statistical methods in genetics, particularly related to using nuclear families to study gene-by-environment interactions in causing diseases with onset early in life, such as childhood cancers; mental illness; and birth defects

PIVOTAL EVENTS

Coincidentally, my personal struggle with infertility ran parallel to my professional involvement with a remarkable study, the Early Pregnancy Study, reinforcing my interest in models for human fertility. This personal problem also effectively delayed child-bearing long enough for me to become deeply invested in my professional life before major distractions intervened. I have also been extremely fortunate to find myself at NIH in the company of dedicated, smart, and creative reproductive epidemiologists, particularly Donna Baird and Allen Wilcox. The whole has been much more than the sum of the parts. I am also grateful to NIH for supporting my professional development over all these years.

MENTORING & WORK/LIFE BALANCE

Having only one child, and having the help of an extremely supportive scientist–husband, who is also informally my mentor, have been a huge help for me. Looking back, I do regret not spending more time with my daughter during her preschool years, however.

INSIGHTS

My main advice is to find a setting where you can develop your interests and then find an area that really turns you on. Forget about marketing yourself and instead find a way to enjoy yourself. If you can leave work at 5:00 and actually leave it behind, then you are not fully engaged. You have to love your work enough to sometimes let yourself be possessed by it—not always but sometimes.

But it isn't all fun. I am a naturally shy person and the one aspect of my professional life that I have always dreaded and despised is public speaking. Nevertheless, I make myself do it, and I don't regret that. It stretches my mind and connects me with people, expanding my vision of how the work I am doing fits, with implications beyond what I knew.

Becoming a branch chief has been a different kind of stretching for me, and it has been extremely gratifying to help in nurturing the development of junior colleagues.

Katarzyna Bebenek, Ph.D.

Staff Scientist, DNA Replication Fidelity Group, Laboratory of Molecular Genetics, Environmental Biology Program, Division of Intramural Research

EDUCATION

Ph.D.: (Genetics) Institute of Biochemistry Biophysics, Polish Academy of Sciences, 1986

M.S.: (Microbiology) Warsaw University, Warsaw, Poland, 1978

RESEARCH INTERESTS

I am interested in the cellular processes of DNA replication and repair that maintain the integrity of the genome, and how their perturbation results in mutations and disease. The key players in these processes are DNA polymerases. The focus of my work is on the mechanisms of DNA polymerases that determine the fidelity of DNA synthesis.

PIVOTAL EVENTS

Pivotal events in my scientific career include good and bad ones. Good ones stimulated my intellectual curiosity, bad ones warned me about the pitfalls of pseudoscience. Whereas my undergraduate work was satisfying and filled with excitement, my first job was a disaster. However, it was an important step for me where I learned that there is no real scientific progress without openness, honest discussion, serious critique of results, and collaboration. As my career progressed, my appreciation of the value of networking with scientists in and outside my field increased. I needed those interactions to continue my scientific work in a meaningful way.

There was no single event that I could pinpoint and label as a major turning point that shaped my career. I cannot recall all the meetings, workshops, retreats, conversations, and arguments, but they all were pivotal for my scientific development. I consider all of them equally important and cannot single out just a few of them.

MENTORING & WORK/LIFE BALANCE

Balancing family and professional life is a tricky task and no amount of mentoring will help solve the dilemma that all of us have faced at some point or another, "Should I run another experiment late into the night or help my kids make the Halloween costumes?" Those questions are terrifying if faced alone, but I was fortunate to have the support of my family, network of friends, understanding supervisors, and coworkers. An environment of family-friendly regulations was also helpful.

Learning through example has always been praised. During his formative years, my son spent quite a lot of afternoons and weekends in my lab and I am sure that by being involved in what I do, he has learned a great deal about the joys and frustrations of being a scientist, work ethics, and that there are jobs that last well beyond 9 to 5 and are fun.

Today I don't have any regrets, but I sometimes wonder if my career would turn out differently if I didn't have to do all this balancing.

Leesa J. Deterding, Ph.D.

Staff Scientist, Mass Spectrometry Group, Laboratory of Structural Biology, Environmental Biology Program, Division of Intramural Research

EDUCATION

Ph.D.: (Chemistry) North Carolina State University, 2000

M.S.: (Chemistry) University of Nebraska-Lincoln, 1987

B.A.: (Chemistry and Math) Hastings College, Hastings, NE, 1984

RESEARCH INTERESTS

My research interest has focused on the development and application of mass spectrometric techniques to structural problems in biology. Currently, these applications are focused on the tertiary structural characterization of the antigens associated with the autoimmune disease, Sjögren's syndrome. Additional biological questions of interest include the application of mass spectrometry based determination of modified and/or post-translationally modified proteins, the interactions of proteins with other biomolecules, and the identification of protein complexes via immunoprecipitates. A major component of my research effort also includes the innovative development of mass spectrometry approaches in protein structural techniques, peptide mapping methodologies, affinity techniques, and separation methodologies.

PIVOTAL EVENTS

After receiving a Master of Science degree in chemistry, I accepted a research position at NIEHS. It soon became evident that, in order to achieve my career aspirations in science, it would be essential to earn a Ph.D. Consequently, I made the decision to re-enter graduate school. The rewarding and interesting journey of graduate classes while working full-time eventually led to a Ph.D. in chemistry. This accomplishment would have been extremely difficult without the support of family and colleagues. Even though many of life's triumphs may not come easy, with hard work and determination, one can overcome obstacles and achieve the goal. The decision to re-enter graduate school to obtain my Ph.D. was a pivotal event that has allowed me the opportunity to attain higher career goals. There are many opportunities for exciting and dynamic careers in science, and I would encourage anyone to pursue those opportunities.

MENTORING & WORK/LIFE BALANCE

The balance between family and profession was acquired from experiences from both childhood and scientific mentors. My parents instilled the importance and priority of family while inspiring a sense of independence and perpetual establishment of high goals. My allegiance and enthusiasm for science comes from many interactions with various scientists throughout my career. The dedication of many of these individuals has been an inspiration for how I approach my own work and research. I am fortunate that I truly love and have a genuine passion for what I do professionally. Although the balance between family and professional life can be challenging, there are times when each has its own priority. Life balance is an ongoing process; it will throw you curve balls from time to time. The key to growth and personal fulfillment is to remember it is a process rather than an event.

June K. Dunnick, Ph.D.

Senior Scientist, Toxicology Branch, National Toxicology Program, Division of Intramural Research

EDUCATION

Ph.D.: (Medical Sciences)
Cornell University Medical School

M.B.A.: Kenan-Flagler
Business School, University of
North Carolina, Chapel Hill

B.S.: (Biological Sciences)
Cornell University

Diplomate: American Board
of Toxicology

RESEARCH INTERESTS

I promote, design, and administer research programs to understand how environmental exposures affect our health. My research is focused on identifying and evaluating the beneficial and harmful effects of environmental chemicals, drugs, metals, and other chemicals of concern so that strategies can be developed to prevent exposures to harmful agents or to develop treatment strategies, particularly for cancer, reproductive disease, and infectious diseases. This involves the design, analysis, and interpretation of experimental studies to identify biological effects, and extrapolation of results to man through the use of metabolism/pharmacokinetic studies and mechanistic studies. My responsibilities include serving as senior scientist for toxicologic and carcinogenesis studies and identifying new initiatives for the development of a better understanding of environmental disease through the integration, extrapolation, and analysis of data from a broad range of experimental studies. I serve as a focus, representative, and spokesperson for the Institute to report the findings from toxicology and carcinogenesis research studies.

PIVOTAL EVENTS

Science is discovering and learning about life processes. Career success depends on the ability to adapt to change. Today's scientist must be able to function independently as well as on a team. Pivotal events in my career include serving as the NIAID antiviral and hepatitis program officer where our team developed new antiviral drugs and began the hepatitis vaccine development program in collaboration with industry, academia, and government scientists. At NIEHS, I evaluate the carcinogenic potential of environmental exposures (e.g., nickels and phenolphthalein) and work with government regulatory agencies to develop disease prevention strategies. My work on the study of the cardiotoxic potential of environmental exposures has led to the development of models to understand cardiac disease mechanisms. I established the NIEHS Genetic Alterations in Cancer knowledge system to promote recombining of information for new discovery (https://dir-apps.niehs.nih.gov/gac/).

MENTORING & WORK/LIFE BALANCE

Life skills necessary for a successful science career are the same sets of skills needed for a successful family life, including working as a team, and creating a win/win situation for each member of the team. Providing areas for growth and recognition for all family members are the same goals as for a science team. In bringing up my children, I sought to make their lives interesting and rewarding. While at work, I would leave craft or science projects that would allow for creative input. Innovation and imagination helps to instill a joy for learning and sense of accomplishment and satisfaction. Thus, even though one might not be at home, your children will still have a connection to you by the tasks and projects you have left for them. Communication, caring, and respect for the individual are key life skills at home and at work.

Dori Rabin Germolec, Ph.D.

Immunology Discipline Leader, Toxicology Branch, National Toxicology Program, Division of Intramural Research

EDUCATION

Ph.D.: (Toxicology) North Carolina State University, 1995

M.A.: (Physical Anthropology) Duke University, 1983

B.A.: (Physical Anthropology) Duke University, 1979

RESEARCH INTERESTS

My research interests include investigating the interaction between environmental, industrial, and pharmacologic agents and the immune system; and defining the cellular and molecular role of cytokines in toxicity in a variety of organ systems including the skin, lung, and liver. My laboratory studies are focused on establishing the relationship between alterations in levels of growth promoting cytokines and arsenic-induced carcinogenicity and dermatotoxicity.

PIVOTAL EVENTS

One of my first undergraduate professors went out of his way to make learning fun and interesting, and I have never forgotten his irreverent examples and open teaching style. I have been extremely fortunate to have outstanding collaborators and mentors throughout my graduate and intramural research career and each has shared wisdom and insight that I often call upon as I address specific scientific and management issues.

MENTORING & WORK/LIFE BALANCE

I think the key to balancing work and family for all of the scientific community is networking. Sharing the successes and not-so-successful ventures of women and men with similar interests and issues provides both perspective and guidance. The establishment of the Women's Scientists Association at the NIEHS has provided an excellent forum for these types of activities. It is unfortunate that the NIH is not as supportive as it should be to women in science trying to balance career and family. The lack of maternity leave for women at the NIH is inexcusable and likely impacts recruitment and retention of investigators early in their career. That said, I personally have been very fortunate to have mentors who realize the importance of being available for family time.

Joyce Allen Goldstein, Ph.D.

Head, Human Metabolism Group, Laboratory of Pharmacology, Environmental Toxicology Program, Division of Intramural Research

EDUCATION

Postdoctoral Fellow: (Pharmacology) Emory University Medical School, 1967–1968

Ph.D.: (Pharmacology and Biochemistry) University of Texas Southwestern Medical School, 1968

B.S.: (Biology) Southwest Missouri State College, 1962

RESEARCH INTERESTS

I am interested in the human CYP2C enzymes that metabolize drugs, particularly the CYP2C subfamily, several members of which were first discovered and cloned in our laboratory. We have worked on genetic polymorphisms and how they can adversely affect metabolism of clinical drugs producing toxicity in susceptible populations. More recent work is centering on the transcriptional regulation of CYP2C enzymes by nuclear receptors, crosstalk between various receptors, and how these enzymes are regulated.

PIVOTAL EVENTS

Switching my research from rodent to human drug metabolizing enzymes in the early 1990s was challenging but rewarding. I was under immense pressure at NIH to work on something related to human risk. I picked a risky project—the discovery of the enzyme that accounted for genetic variability in the susceptibility to certain drugs, and then identifying the polymorphisms in this enzyme, CYP2C19, which were responsible for this variability. I focused all of the limited resources I had into this one project. Cloning and discovering the human enzyme, CYP2C19, and finding the mutations in CYP2C19 and CYP2C9, which were responsible for the poor metabolism of certain drugs in many individuals was due to both my hard work and that of two successful postdoctorates, Marjorie Romkes and Sonia DeMorais. I think working hard, focusing one's work on the one or few important project(s), and being willing to take a risk are keys to success. Many people are not willing to focus on a single project. Another key to success is the luck to have the right talented postdoctorates or students and being able to recognize the right talent for a project.

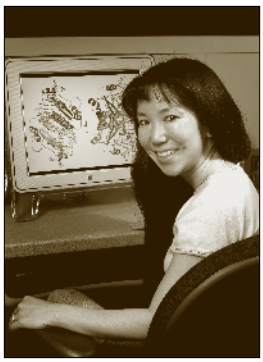
MENTORING & WORK/LIFE BALANCE

I am married but do not have children. I am afraid my choice is not one many women would want to make nor one I would choose for someone else. I have always wanted to be a success as a scientist. Perhaps in the present climate it is easier to bal-

ance a career and family than when I was young, but there will always be difficulties since women usually have the primary role of caregiver. One must have the drive and ambition to choose which things in life are most important to you. My husband has been supportive, particularly when health issues arose more recently for me. I have also had fortunate collaborations from scientists I consider friends who were generous when I needed scientific expertise and help. The only real mentoring I can remember is when I was an undergraduate, my first year in biology. The Head of the Department, Dr. Robert Stevenson, convinced me that there was a future for me as an independent Research Scientist. When I said my parents had no money for graduate school, he encouraged me to apply for scholarships. On the other hand, I believe I did often find a scientific colleague to bounce my important big decisions off. It is often necessary to seek out your own mentor—someone whose decisions you respect. Even if I did not take the advice given, having someone listen to me and give me their opinion helped me see what I really wanted to do.

Traci M.T. Hall, Ph.D.

Senior Investigator, Macromolecular Structure Group, Laboratory of Structural Biology, Environmental Biology Program, Division of Intramural Research



EDUCATION

Postdoctoral Fellowship: (Biophysics and Biophysical Chemistry) The Johns Hopkins University School of Medicine, 1994–1998

Fellowship: American Association for the Advancement of Science (AAAS), Science, Engineering, and Diplomacy Fellow, U.S. Agency for International Development, 1992–1994

Ph.D.: (Pharmacology and Molecular Sciences) The Johns Hopkins University School of Medicine, 1992

B.S.: (Biochemistry) University of California, Los Angeles, 1986

RESEARCH INTERESTS

Structural and biochemical studies of proteins involved in post-transcriptional gene regulation; understanding how proteins specifically recognize RNA targets

PIVOTAL EVENTS

After graduate school, I worked as an American Association for the Advancement of Science Diplomacy Fellow, working at the U.S. Agency for International Development. This experience inspired me with the kinds of projects that could be done through investigator-initiated programs. I also learned the value of management skills through an outstanding mentor.

I went onto complete a postdoctoral fellowship at Johns Hopkins School of Medicine where I learned to use x-ray crystallography to study the structure and function of proteins. This experience was instrumental in shaping the way I conduct science in many ways. I worked as part of a team of collaborators that was highly interactive and rigorous in investigation. My postdoc mentor was very supportive and helped me to have many opportunities to communicate my research results, and the department as a whole provided an intellectually stimulating environment that encouraged a broad knowledge of structural biology.

MENTORING & WORK/LIFE BALANCE

Mentors have been important in my career development, but it is important to remember that one needs to initiate these relationships by interacting with strong role models and asking for advice when approaching new situations. No one will be more interested in your future achievement than yourself.

I have a relatively unique experience with balancing family and work because my Ph.D. scientist–husband stayed home with our children for 8 years after starting my lab. Now that he has a new job, I am learning the importance of making choices that maintain a balance consistent with the priorities I have established. When I was a postdoc and whining about being unable to go on a data collection trip because I was pregnant, a woman faculty member remarked that it was only the first time I would give up something for my child and I should get used to it.

Freya Kamel, Ph.D.

Staff Scientist, Chronic Disease Epidemiology Group, Epidemiology Branch, Environmental Diseases & Medicine Program, Division of Intramural Research

EDUCATION

M.P.H.: (Epidemiology) University of North Carolina at Chapel Hill, 1991

Postdoctoral Fellow: (Neuroendocrinology) Rockefeller University, 1978–1981

Ph.D.: (Biological Sciences) SUNY-Binghamton, 1978

B.A.: (Mathematics) Brandeis University, 1969

RESEARCH INTERESTS

Neurodegenerative disease, environmental influences on neurologic dysfunction, biomarkers of early disease, and disease progression

PIVOTAL EVENTS

No one event stands out; rather, the total experience has been important. I have loved science since I was a child, in school and out. My first job in a lab after college was a delight, more fun than work. Through graduate school, postdoc, and beyond, I have been constantly stimulated by new ideas and the thrill of seeing data fall into place to confirm a theory. Even routine work, first in a lab and then analyzing data as an epidemiologist, has been fun. Mentors, colleagues, and students have been a source of inspiration throughout my career, particularly those whose loyalty to knowledge trumped their biases.

MENTORING & WORK/LIFE BALANCE

Mentoring is critical to success for all scientists but perhaps especially for women. Most of my mentors have been men, and, although they were supportive and inspiring, it would have been beneficial to have a woman in that role—unfortunately, in those years there were few women sufficiently senior to serve as mentors. Sadly, this is still the case. Balancing family and profession is immensely challenging for women, and these days for men as well, and women may be more adept at guiding young scientists through the difficulties involved. It's a Catch 22: there will be more successful women scientists only when there are more successful women scientists available to mentor them.

Stephanie J. London, M.D., Dr.P.H.

Senior Investigator and Head, Genetics, Environment & Respiratory Disease Group, Epidemiology Branch, Environmental Diseases & Medicine Program, Division of Intramural Research

EDUCATION

Dr.P.H.: (Epidemiology) Harvard School of Public Health, 1989

M.P.H: Harvard School of Public Health, 1983

M.D.: Harvard Medical School, 1983

B.A.: (History and Science) Harvard College, 1978

RESEARCH INTERESTS

Genetic and environmental factors, and their interactions, in relation to asthma and chronic obstructive pulmonary disease

PIVOTAL EVENTS

There are so many interpersonal interactions and events that influenced me along the way, it is hard to say.

MENTORING & WORK/LIFE BALANCE

I received little formal mentoring on how to balance family and professional responsibilities. However, I was fortunate to participate in a medical women's faculty organization at the University of Southern California School of Medicine. I had the opportunity to get advice from women who had recently had children and those whose children were grown. All of this was invaluable. The group had funds to send junior faculty to a meeting called something like Professional Development for Junior Faculty Women that was sponsored by a national organization. There were numerous workshops, some with advanced reading on negotiation strategies, which were extremely useful. One piece of advice that I remember from a session was "never serve on a committee where you are the only woman." Whenever I have ignored this rule, I have regretted it.

Lisa G. Rider, M.D.

Deputy Chief, Environmental Autoimmunity Group, Clinical Research Program, Division of Intramural Research

EDUCATION

M.D.: Duke University School of Medicine, 1987

A.B.: (Chemistry with Biochemical Specialization) Duke University, 1983

RESEARCH INTERESTS

Genetic and environmental risk factors for juvenile myositis and other pediatric rheumatic diseases; autoantibody subgroups and prognostic factors for juvenile myositis; outcomes and assessment in myositis; therapeutic and preventive trials for myositis

PIVOTAL EVENTS

Access to excellent educational and training opportunities throughout my career has been pivotal in my success as a scientist. My early research experiences included a full year in medical school in a basic immunology lab, which resulted in my coming to the NIH for a basic immunology fellowship following residency training. The bench-to-bedside model at the NIH enabled me to attend patient rounds and disease-oriented lectures, and to recognize that my questions were more patient-focused. Following my first postdoctoral fellowship, I was able to switch into clinical research in a second fellowship. It was through seeing interesting patients at these

patient conferences that I became interested in myositis. Paul Plotz, one of my mentors, keeps this motto on his laboratory door: "Chance favors the prepared mind." I like to remember this every day—to seek outstanding education and training, to pursue my questions to their fullest, and to be prepared for new research directions.

MENTORING & WORK/LIFE BALANCE

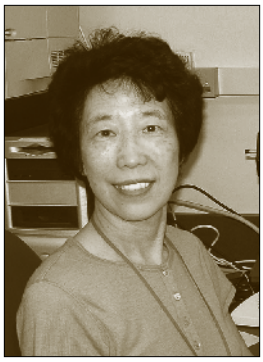
Throughout my education, I have been fortunate to find excellent mentors. My female mentors not only inspired a high level of academic accomplishment, but also spoke in some detail about balancing career and family life and provided specific helpful suggestions from their own lives. Hooking up with supportive mentors has been critical.

I have also been extremely fortunate with my current mentor, Frederick Miller, with whom I have worked for more than 14 years. He has fostered my career development from a postdoctoral fellow through becoming a staff scientist and the group's deputy chief. In this staff scientist role, I have been more able to balance the demands of a research career and family life. I often have flexibility in my office schedule, to be able to get my son off to school in the morning and to be home in the early evening to facilitate homework and being a mother. In the late evening, or during baseball practices, I am generally back working on the computer or reading journals. It takes a constant dedication and focus on both jobs to be accomplished in both.

Christina T. Teng, Ph.D.

Head, Gene Regulation Group, Laboratory of Reproductive and Developmental Toxicology, Environmental Diseases & Medicine Program, Division of Intramural Research

EDUCATION



Research Associate: (Molecular Biology) Brookhaven National Laboratory, Stony Brook, NY, 1971–1973

Postdoctoral Training: (Molecular Biology) Rockefeller University, New York, NY, 1969–1971

Ph.D.: (Molecular Biology) University of Texas at Austin, 1969

B.S.: (Biology) Tunghai University, Taichung, Taiwan, 1963

RESEARCH INTERESTS

Molecular mechanisms of gene regulation including the molecular basis of estrogen action in the regulation of lactoferrin gene expression; estrogen-related receptor alpha (ERRα) - biological role(s) and regulation of expression by PGC-1alpha, estrogen and environmental estrogens; lactoferrin and ERRα in cancer cells

PIVOTAL EVENTS

As a child, I used to spend hours observing the activities of my pets, which included fish and mice. My father would spend time with me answering any questions I had about their behavior. He was the one who told me about the discovery of the DNA double helix by Watson and Crick while I was in grade school. His nurturing of my interest made it natural for me to focus on biology while in college. My Ph.D. thesis advisor, Dr. David Block at the University of Austin, Texas, was the first to introduce me to the exciting field of molecular biology and my postdoctoral mentor at the Rockefeller University, Dr. Vincent Allfrey, taught me to be an independent thinker. These key people both developed and trained me in a traditional manner, which has served me well throughout my career as an independent researcher and leader in my field.

MENTORING & WORK/LIFE BALANCE

The development of independent thought and self-confidence is what I strive to develop in my postdoctoral fellows. I ensure that they learn how to conduct solid experiments and to constantly ask the question, "Why?" The greatest reward is when they become confident to move forward in their career.

Creating harmony between a demanding career and a happy family is not always easy. However, with proper time management, a degree of efficiency, and most importantly family support, this can be achieved. Part of this is to allow me the freedom to achieve both personal and professional goals. The support I receive even enables me to pursue my hobbies such as piano, which I love. My husband has been a true partner both career wise in science and in family life; my two daughters learned early on to develop independence and to be responsible for themselves and each other.

National Institute of General Medical Sciences

Judith H. Greenberg, Ph.D.

Director, Division of Genetics and Developmental Biology

EDUCATION

Ph.D.: (Developmental Biology) Bryn Mawr College, 1972

M.A.: (Biology) Boston University, 1970

B.A.: (Biology) University of Pittsburgh, 1967

RESEARCH INTERESTS

Genetics, developmental biology, bioethical issues in genetics

PIVOTAL EVENTS

First, of course, was my decision to pursue a Ph.D., which I made while doing an honors undergraduate research project. I had always assumed I would go to medical school and practice medicine, but this experience "turned me on" to research. The most important decision in my career was to leave the lab and begin life as a health scientist administrator (HSA). This has proven to be very rewarding and has enabled me to have an influence on the direction of research and the development of policies while maintaining a close connection to scientific progress.

MENTORING & WORK/LIFE BALANCE

I was fortunate to be hired by Dr. Ruth Kirschstein, then Director of the National Institute of General Medical Sciences. She mentored me (and a large number of other young HSAs—both male and female) and served as a wonderful role model.

With respect to balancing family with professional responsibilities—my daughter was born when I had just begun as a postdoc and then staff fellow in the National Institute of Dental Research. After a short maternity leave, the lab allowed me to work shorter than normal hours (7:30 to 2:30, I think) for a while. Thanks to their flexibility, I never felt that I was neglecting my family or my research.

As time went on, and I took on the role of supervisor, I've tried to give my staff similar kinds of flexibility to deal with family issues.

INSIGHTS

Within about 7 years of joining NIGMS, I became the Director of the Division of Genetics and Developmental Biology (originally called the Genetics Program Branch), one of the three scientific

divisions of NIGMS. While I have been in that position for nearly 20 years, my job continues to change as a result of many special assignments that I've had over the years. These range from serving as the executive secretary of the Panel to Assess the NIH Investment in Research on Gene Therapy to serving on the Executive Committee of the Federal Demonstration Partnership, establishing the initial Human Embryonic Stem Cell Registry, convening meetings on bioethical issues in genetic studies on tissue samples, and directing the NIH Director's Pioneer Award program and establishing and directing the NIH Director's New Innovator Award program. A highlight of my career was serving as the Acting Director of NIGMS for 1 1/2 years.

I've always considered NIGMS to be very welcoming and nurturing to women, and I can honestly say that in all my years here, I never felt that being a woman in any way hindered my advancement or opportunities. Similarly, in my activities that took me into the broader NIH community, I've always felt that gender was not an issue. However, I do appreciate that in the academic community, this is not necessarily the case, and I've worked proactively to ensure that women were invited to meetings or serve on committees that I organize. I also tried (but failed) last year to persuade NIH to include consideration of gender equity in its requirement for instruction in responsible conduct of research for training grants.

Ann A. Hagan, Ph.D.

Associate Director for Extramural Activities; Director, Division of Extramural Activities

EDUCATION

Ph.D.: (Physiology)
University of Illinois-Urbana-Champaign, 1976

M.S.: (Biology Education)
University of Illinois-Urbana-Champaign, 1972

B.S.: (Biology Education)
University of Illinois-Urbana-Champaign, 1970

RESEARCH INTERESTS

Physiology

PIVOTAL EVENTS

My parents always supported my efforts and reinforced the notion that I could achieve my goals. This was in contrast to being told that I was being considered for my first, real, postgraduate academic position because the department needed a woman—not because I was the best qualified candidate. I have always striven to give my best effort to my job, regardless of whether it was temporary or permanent, because I owed it to myself and to those who hired me to do so. My path to my present position has been a combination of hard work and continued performance, which my supervisors have recognized.

MENTORING & WORK/LIFE BALANCE

As a new recruit to extramural NCI, I was most fortunate to have a Section Chief and Branch Chief who believed strongly in mentoring new staff. They were most supportive, always available for questions and explanations, noted that everyone makes mistakes, and reassured me that mistakes could be corrected. They also made allowances for family needs and emergencies.

On the home front, the balance between family and work is not easy, and it requires understanding, communication, and empathy on all sides. Priorities must be clear, responsibilities shared, and compromises negotiated fairly. Support from your spouse is essential. It is important that no one—child or parent—feels ignored or undervalued. Remember to nurture all aspects of your personality—professional, spouse, parent—but know that you do not need to be "superwoman" in everything to be successful.

INSIGHTS

My experiences at NIH over a 20-year plus span have been very positive. In the various extramural positions I have held, I have been encouraged to expand my capabilities and supported by colleagues and supervisors to move onto additional challenges. When I consider what I have accomplished, I feel a sense of pride to have contributed to the NIH mission at different levels.

Catherine Lewis, Ph.D.

Director, Division of Cell Biology and Biophysics

EDUCATION

Ph.D.: (Biochemistry)
Princeton University, 1983

B.A.: (Psychology)
Barnard College, 1970

RESEARCH INTERESTS

Chromosome structure, single molecule biophysics, nanotechnology, cellular imaging

PIVOTAL EVENTS

There have been a number of pivotal events along my path that had an impact on my decision to pursue science as a career and on my success as a scientist and administrator. Each of these, although they now appear well separated in time and context, had the effect of giving me more confidence in myself and in the choices I was making. Specific examples include as a psychology major in college, discovering that I could succeed in difficult chemistry courses that I feared if I took the time to study the material; discovering that I enjoyed thinking deeply about chemistry; finding stimulating colleagues and mentors in graduate school and beyond who wanted to work with me or talk to me about science, in effect, to be taken seriously as a scientist; once outside the lab in the NIH extramural community, finding new challenges and projects to work on to stimulate emerging fields; as a manager, Branch Chief, and then Division Director, learning how to oversee larger arrays of programs, consider the broader view of how science is done and funded, how to shape the policies that guide it, how to manage people, how to negotiate, and how to organize my own very busy life. Above all, I think the most valuable lesson I have learned from my own experiences is the idea of thoroughness—whether it is studying and thinking hard to understand a difficult scientific concept, preparing for a talk, or carefully reading the documents before a meeting.

MENTORING & WORK/LIFE BALANCE

Balancing family with professional responsibilities is one of the most difficult challenges for women in science, but I do believe it is possible and worthwhile. I would not have been nearly as happy if I had sacrificed my career for my family or given up my chance to have a family for my career. Balancing these two aspects of one's life is a skill that one learns as one goes along and it changes as your family grows older. It is greatly facilitated by an understanding and helpful husband (or partner) and serious household/childcare help. A great payoff of trying to balance family with professional responsibilities is that your children and husband benefit greatly from your experiences in managing your career; being a good manager has helped me in organizing my household and children's activities. In addition, I have discovered that my family is proud and interested in my career and happy that I offer something different to them and to the community than most other mothers and wives. Over the years, I have learned that the frustrations of the day in the lab or office fade away quickly as soon as I come home to my family who have totally different expectations, demands, and issues to share with me. It has kept me sane. In the end, the balancing act that you maintain keeps you balanced as well.

In terms of mentoring, I believe that one's own experience with one's career provides a solid foundation for understanding of how to mentor and supervise others. In addition, raising a family provides additional information about how different work styles develop within a family, the origin of intellectual interests and academic skills, and the formation of social attitudes and self perception.

INSIGHTS

A major milestone for me was at the beginning of my career, long before I entered graduate school. I graduated from Barnard College with a degree in psychology, but had no interest in going to graduate school in psychology. I found a good job at Rockefeller University as a research assistant in a physiological psychology lab, but realized after a few months that I wanted to do more with myself. Based on my embryonic interest in biology and chemistry, I started to take every chemistry, math, and physics course I could find in the evenings after work. To make a long story short, I effectively repeated college, but this time with a degree in chemistry. It took 7 years of working and studying part-time to finish all the coursework I needed. I was more motivated than I ever had been in high school or college because I truly loved chemistry and I could see how dull work would be without the intellectual freedom I wanted to have. I had no trouble getting into excellent Ph.D. programs in chemistry. This experience not only set my career on the right track, but it demonstrated to me that with perseverance and hard work, I could shape my own future. It was a very good lesson in taking responsibility and making things happen.

These are a few principles that I go back to over and over again as I have moved through different career stages:

Do what you love scientifically, otherwise it isn't worth it. Be sure that you know what you are talking about before you speak. Work very hard to achieve your goals—don't make excuses for yourself. Write clearly; speak clearly. Learn how to give a really good, stimulating talk. Learn to negotiate and to listen carefully. Do away with arrogance and anger; you do not always have to be right. Look for opportunities; be creative about finding new challenges. Be a good colleague and supportive of your work environment, whatever it is.

Helen R. Sunshine, Ph.D.

Chief, Office of Scientific Review

EDUCATION

Ph.D.: (Bioinorganic Chemistry) Columbia University, 1975

B.Sc.: (Inorganic Chemistry) Oxford University, 1968

A.B.: (Chemistry) Barnard College, 1966

RESEARCH INTERESTS

Biophysical chemistry, biochemistry, bioinorganic chemistry

PIVOTAL EVENTS

There was no single pivotal event. My interest was sparked by a high school chemistry teacher and I had other wonderful teachers, advisors, and most importantly supportive mentors along the way. I was fortunate to work in superb research environments, which fostered creativity and productivity, and was fortuitously in the right place at the right time (the NIH) when I decided to move from research to science administration.

MENTORING & WORK/LIFE BALANCE

My first child was born when I was a second-year Ph.D. student and my second just as I was finishing up. I found that a pretty easy time to have children. It was easy to find babysitters in a university setting, and with my husband also a student, our schedules were fairly flexible. I had understanding and supportive predoctoral and postdoctoral mentors (both male) who made it possible for me to be productive while attending to family responsibilities as needed.

INSIGHTS

For me, it was very important to be doing something that brought a great deal of satisfaction and that I felt I could do very well. My initial positions after graduate school involved college teaching, and I concluded quickly that I was not very good at it and therefore did not enjoy teaching. As a result, an academic position was of less interest to me than a full-time research position. In terms of research, there could not have been a better place for me to be than the NIH intramural program; it was an exciting intellectual and scientific environment and allowed me to move from more purely chemical research to more biological research. If I could have stayed there in a permanent research position, I certainly would have (and at the time I was disappointed that I could not). But I found myself turning down other offers of research and academic positions, and once I learned about the extramural program (from the mother of a classmate in my daughter's day care), I determined that that was where I wanted to be. I felt that science administration would make the best use of my scientific knowledge and organizational skills and pursued positions until the right one came along. It was the right choice for me, and I have had a wonderful career.

National Institute of Mental Health

Jacqueline N. Crawley, Ph.D.

Chief, Laboratory of Behavioral Neuroscience, Division of Intramural Research Programs

EDUCATION

Postdoctoral Fellowship: (Neuropsychopharmacology) Yale University School of Medicine, 1976–1979

Ph.D.: (Zoology) University of Maryland, 1976

B.A.: (Biology) University of Pennsylvania, 1971

RESEARCH INTERESTS

Biological mechanisms underlying the behavioral symptoms of neuropsychiatric disorders, including Alzheimer's disease, anxiety, autism, depression, obesity, and schizophrenia. Current research in our laboratory focuses on modeling the symptoms of autism in mutant mouse models, to test hypotheses about genes causing autism spectrum disorders.

PIVOTAL EVENTS

Great discoveries begin with great ideas. New concepts are greeted with a predictable sequence: "That's impossible" (meaning you are way ahead of the curve); followed by "Everyone already knows that" (meaning your findings are now well-established). Pivotal events in my career centered on initiating novel research directions that extramural colleagues and review boards considered too risky. In the early 1980s, our behavioral strategies contributed to the search for endogenous ligands of the newly discovered benzodiazepine receptor, with a great mentor and collaborator, Steve Paul. Discoveries of neurotransmitter coexistences in the late 1980s and 1990s led to our studies of neuromodulatory roles of the coexisting peptide cholecystokinin on dopaminergic functions, and the neuropeptide galanin in learning and memory processes. Our newest challenge is to design mouse behavioral tasks with analogies to the symptoms of autism, to test hypotheses about gene mutations causing autism. In each case, success was decidedly unassured. Pivotal moments included conversations with very smart, insightful, senior colleagues who understood both the scientific question and the risk, and advised me to go for it.

MENTORING & WORK/LIFE BALANCE

Women scientists of my generation faced two major hurdles that are now partly resolved. Childcare facilities on the NIH campus and at many universities offer reasonable solutions to the fundamental conflict between being a successful researcher and a committed mother. Larger numbers of women colleagues

and mentors have lessened the aloneness of women neuroscientists. The biggest challenge for today's young neuroscientists may be obtaining that first all-important independent faculty position. Sometimes women candidates interview less strongly, or are rated less highly, because their speaking style seems unfamiliar to the senior male faculty members of the department. Often there is a conflict between husband and wife about whose career has priority in making a geographical move, which limits the options of the woman scientist to respond to advertisements or accept an offer. I am cautiously optimistic that it will be easier for the next generation, both women and men, to obtain good research positions, as baby boomers retire and there are more university and company openings to be filled.

INSIGHTS

Running experiments may be a solitary endeavor, but succeeding as a researcher involves collaboration and leadership. Don't be shy. Initiate collaborations. Ask your department chair and senior mentors to recommend you for awards. Go to conferences, present posters, give talks, volunteer for prominent responsibilities in your department, serve on organizing committees for meetings, agree to review manuscripts and grant proposals. Experiences of all sorts add exponentially. Reviewing manuscripts and grant proposals teaches us how to write our own papers and grants. Giving talks in small settings leads to invitations to give major lectures in prestigious venues. As examples, volunteering to chair the organizing committee of the Summer Neuropeptide Conference for 7 years, I built professional relationships with a large number of neuropeptide researchers that led to productive collaborations, and was later offered the editorship of the journal, *Neuropeptides*. Serving as Acting Deputy Scientific Director of the NIMH Intramural Program for a year, I gained insights into how decisions are made in a large, hierarchical organization. Saying yes to an invitation from Wiley publishers, I wrote a book, "What's Wrong With My Mouse? Behavioral Phenotyping of Transgenic and Knockout Mice," now widely used, which increased the number of high-quality applicants for postdoctoral positions in our lab.

Research scientists must function on a long reinforcement schedule, punctuated by many punished trials. Experiments disprove your hypothesis, grants are triaged, manuscripts are rejected. Stay positive. Your next great discovery is just ahead. The NIH Intramural Program is a tremendous research environment because multitudes of good ideas are constantly circulating to inspire your next project. In my experience, the key to maximizing your scientific career is simply to deal with the obstacles and keep on doing your very best work.

Kathleen Ries Merikangas, Ph.D.

Chief, Genetic Epidemiology Research Branch, Division of Intramural Research Programs; Associate Director for Epidemiology Policy

EDUCATION

Postdoctoral Fellowship: (Genetic Epidemiology) Yale University School of Medicine, 1984–1986

Ph.D.: (Chronic Disease Epidemiology) University of Pittsburgh, School of Public Health, 1981

M.S.: (Counseling Psychology) University of Pittsburgh, 1974

B.A.: (Psychology and Music) University of Notre Dame, 1973

RESEARCH INTERESTS

Genetic epidemiology of mental disorders, population-based studies of mental and physical disorders, comorbidity of migraine and cardiovascular and affective disorders

PIVOTAL EVENTS

Many influential events that facilitated my career growth involved taking advantage of opportunities that emerged at transition points in my education. Advice by the chairman of the department where I was doing a clinical internship turned out to be a pivotal event in my career. When I followed up on his advice to take a course in psychiatric epidemiology, the professor asked me if I would be interested in applying for a Ph.D. through her recently funded NIMH doctoral training program. I didn't know anything about epidemiology at the time, but this field subsequently became the central theme of my training and research. I was inspired by the systematic approach of epidemiology to seek the causes of diseases, to link information from diverse disciplines in identifying disease risk factors, and to translate this knowledge into treatment and prevention.

MENTORING & WORK/LIFE BALANCE

My primary mentors for doctoral and postdoctoral training were excellent teachers and role models, who also provided advice in balancing career and family demands. This challenge is not limited to the early childbearing years, but rather continues to be a lifelong issue as we continue to balance our roles as parents, spouses/partners, and often as caretakers of our aging parents. A successful balance between our work and personal relationships can only be accomplished with our family's understanding that career demands may sometimes supersede those of our responsibilities at home. A work environment that is sufficiently flexible to accommodate the needs

of our outside lives is also important. Because much of our work can be conducted off-site, however, those of us with careers in science are fortunate to have a greater ability to balance our research and family life than our counterparts in the business, education, and even clinical world.

INSIGHTS

The availability of support for education, training, and career development strongly facilitated my career. The funding not only covered formal coursework and research, but also provided a forum for me to develop collaborations with scientific colleagues and mentors outside of my own academic setting. Sequential research scientist awards were critical to my acquiring knowledge in other disciplines and establishing interdisciplinary collaborations that strongly influenced my research. For example, receipt of an NIH-funded research scientist development award allowed me to pursue advanced training in genetics and other relevant areas at a time when few other people in the country had formal training in both epidemiology and genetics. The recent merger of the tools of these fields has generated major advances in our understanding of how genes and environmental factors work together to cause human diseases.

Judy Rapoport, M.D.

Chief, Child Psychiatry Branch,
Division of Intramural Research Programs

EDUCATION

M.D.: Harvard Medical School, 1959

B.A.: (Experimental Psychology, Biology, and English) Swarthmore College, 1955

RESEARCH INTERESTS

Biology and treatment of severe childhood-onset psychiatric disorders

PIVOTAL EVENTS

To begin with, my parents had high ambitions for their two daughters, and never showed any indication that they wished they had had sons! I went to coed schools with clearly equal expectations for men and women. Swarthmore College, a Quaker school, was coeducational when founded in 1860, because it felt women should have working careers, and be able to raise a family. They (i.e., the Society of Friends) encouraged delaying child rearing in order to achieve this.

I had many mentors who were either great teachers (such as Dr. Hewnry Gleitman from the psychology and Dr. Meinkoth from the biology departments) and quite a few others during training. Particularly helpful were Borje Cronholm, Head of Psychiatry Department at the Karolinska Institute in Stockholm, and other role models such as Dr. Michel Rutter at the Maudsley Hospital and Dr. Leon Eisenberg at Harvard, both outstanding clinical researchers.

In retrospect, some of the most important career-forming events were unexpected. When my plans did not work out for choice of city (e.g., to stay at Harvard, or get further clinical training in the DC area), the substitute choices (such as a year working at St. Elizabeth's hospital, or a Fellowship in Sweden) turned out to provide better experiences for furthering a research career than my initial plans would have given me. My choice of an experimental psychology major in undergraduate years anticipated a growing evidence-based bias in my clinical research field.

MENTORING & WORK/LIFE BALANCE

Because of several geographic moves, I never had any one particular mentor but incorporated the influence from several college and residency contacts. This may have helped foster independence and I certainly never had to deal with differentiating myself from a particular mentor. When I received my first RO1 grant from NIMH, I made many helpful contacts in the Extramural Branch (then called Psychopharmacology Branch), which had regular workshops for grantees that led to important career networking.

Personally, my commitment to a lifelong research career with all the overtime and travel that accompanies it was enabled by my husband who supported my choice fully. He shared visits to schools and pediatricians, staggered travel schedules, etc. But even this would not have been sufficient if we had not had a very mature and loving woman who was our housekeeper for many years (I still mentally thank Mrs. Johnson—long deceased—for her substitute mothering to us all!).

INSIGHTS

My scientific accomplishments in psychopharmacology include showing that the response to stimulants in hyperactive children is nonparadoxical and cannot be used to diagnose brain damage (Rapoport et al. *Science*, 1980). In a series of studies, we showed the efficacy of serotonin-inhibiting drugs in treatment of childhood-onset obsessive–compulsive disorder and showed brain abnormalities in the basal ganglia–frontal cortex (a circuit involved in planning complex behaviors). The branch has also showed that hyperactive children have a characteristic pattern of delayed cortical brain maturation.

My advice for a career in science is be flexible. Some of my best opportunities were not the ones I planned. There are many

ways to get good training, and many places to do this. Don't be discouraged if your first choice doesn't work out.

Susan Anderson Swedo, M.D.

Chief, Pediatrics & Developmental Neuropsychiatry Branch, Division of Intramural Research Programs

EDUCATION

Residency: (Pediatrics) Children's Memorial Hospital Northwestern University, 1981–1983

Internship: (Pediatrics) Children's Memorial Hospital Northwestern University, 1980–1981

M.D.: Southern Illinois University School of Medicine, 1980

B.A.: (Biology/Premedicine) Augustana College, Rock Island, Illinois, 1977

RESEARCH INTERESTS

Childhood psychiatric disorders, such as obsessive-compulsive disorder, Tourette syndrome and related conditions, and neurodevelopmental disorders, particularly autism spectrum disorders

PIVOTAL EVENTS

After I completed my pediatrics training, I worked at Evanston Hospital as Director of Adolescent Medicine. In that position, I was responsible for all adolescent hospital admissions and noted that teens were being admitted multiple times for suicide attempts. We undertook a study to examine why teens were being readmitted following such a serious event and discovered that the adolescents hadn't received any post-discharge care, despite verbal instructions to obtain a followup appointment. Armed with these data, we implemented a new policy requiring that teens who had attempted suicide could not be discharged until they had a specific appointment with a therapist. One year after the policy was instituted, we re-examined the issue and discovered that our recidivism rate had fallen from 60 percent to zero. This experience convinced me of the value of empirical data and the importance of addressing clinical problems with systematic research.

MENTORING & WORK/LIFE BALANCE

In my experience, clinical research (particularly at the NIH) provides the flexibility required to balance professional and personal responsibilities. As a pediatrician, I had become accustomed to being on-call 24/7 for the patients in my private practice and frequently had to sacrifice "home time" for office hours. When I undertook a research fellowship in Dr. Judy Rapoport's Child Psychiatry Branch, I was able to negotiate more reasonable hours and a flexi-schedule that allowed me to volunteer in my daughters' classrooms and attend day-time events, such as preschool graduation. Dr. Rapoport also allowed me to telecommute following the birth of my 2nd and 3rd daughters, so that I could extend my maternity leave (while analyzing data and preparing manuscripts!) These privileges came with the responsibility of a strong work ethic, dedication to the research projects, and documented productivity, but were well worth the effort.

Having benefited from the mentorship of Dr. Rapoport, Dr. Daniel Offer (in Chicago), and other senior scientists, I came to appreciate the value of continued mentorship and value the opportunities that I have to mentor not only students and postdoctoral fellows, but also tenure-track investigators and recently tenured scientists. The mentorship of these emerging scientists is particularly important, as their ultimate success depends as much upon the ability to negotiate the system as it does on the quality of their research.

INSIGHTS

Research methods have changed greatly during the past two decades and fortunately so has the status of women scientists. Dr. Michael Gottesman and Dr. Joan Schwartz deserve a great deal of credit for ensuring that NIH has gender equity, as they've worked tirelessly to provide women with pay equity and equality of resource allocations. In the early 1990s, women scientists in several institutes were making only 50–60 percent as much as their male counterparts and had significantly smaller laboratory resources; those inequities have been eliminated and women scientists are now paid the same as their male colleagues and provided with adequate research support. Similar progress has been made in giving women scientists a "voice" by including them on key committees and as named lecturers. These changes have resulted not only in improvements in the quality of life for women scientists, but in the overall quality of research conducted at the NIH.

Leslie G. Ungerleider, Ph.D.

Chief, Laboratory of Brain and Cognition, Division of Intramural Research Programs

EDUCATION

Postdoctoral Fellowship: (Neuropsychology) NIMH, 1975–1978

Postdoctoral Fellowship: (Psychology) Stanford University, 1972–1975

Ph.D.: (Experimental Psychology) New York University, 1970

B.A.: (Psychology) State University of New York at Binghamton, 1966

RESEARCH INTERESTS

The long-term goal of our lab is to understand the neural mechanisms underlying high-level cognitive processes, including perception, attention, emotion, and learning and memory, especially in the visual modality. Our work in macaque monkeys includes 1) anatomical tracing techniques; 2) physiological recordings of neural activity in awake, behaving animals; and 3) behavioral assessment of selective brain lesions. As much as possible, parallel functional brain imaging studies are conducted in healthy human subjects, in order to link the human findings to the underlying neurobiology established in monkeys.

EVENTS

In 1974, I met Mortimer Mishkin at the annual meeting of the Society for Neuroscience. I presented results on the visual impairments produced by brain lesions in monkeys that were discrepant with his findings in comparable studies. He invited me to join his lab at NIMH to try to unravel the discrepancy. I applied for and was awarded an NRSA, and joined the Mishkin lab the following year. I have been at NIH ever since, generously supported and thriving in this wonderful research environment. In 1995, a new lab, the Laboratory of Brain and Cognition, was created under my leadership.

MENTORING & FAMILY BALANCE

I take mentoring very seriously and spend considerable time with my postdoctoral fellows in fostering their careers. I am very pleased to have been awarded the NIMH Outstanding Mentoring Award in 2003 and the NIH Award for Mentoring in 2004. In addition, I received the Women in Neuroscience Lifetime Achievement Award in 2001; several women who had formerly been postdocs in my lab nominated me for this honor.

In terms of balancing family with professional responsibilities, I had the very good fortune of having a husband, also a scientist, share in the responsibilities of raising our son. It would have been very difficult otherwise to put in the number of hours it takes to be a successful scientist.

INSIGHTS

I began my career at NIMH in 1975 as a Postdoctoral Fellow and I have remained at NIMH ever since, transitioning from Postdoctoral Fellow to Staff Scientist, then to Tenured Investigator, to Section Chief, and finally in 1995 to Lab Chief. This year (2008), I was named an NIH Distinguished Investigator. I owe a great deal to Mortimer Mishkin, whose lab I joined as a postdoc. He generously supported my work and encouraged my independence. In terms of mentoring, I have tried to emulate his example. I think the extent to which a mentor can foster the career of junior colleagues is underappreciated.

For me, NIH has been a superb research environment. It has given me the freedom to take risks and test new ideas, no matter how improbable. As a result, I have been able to build a body of work in cognitive neuroscience that includes neurophysiological, neuroanatomical, and lesion studies in monkeys as well as brain imaging studies in humans. In 2000, I was elected to the National Academy of Sciences and to the American Academy of Arts and Sciences, and in 2001 I was elected to the Institute of Medicine.

Karen Faith Berman, M.D.

Chief, Section on Integrative Neuroimaging, Genes, Cognition, and Psychosis Program, Division of Intramural Research Programs

EDUCATION

Residency/Fellowship: (Nuclear Medicine) NIH Warren G. Magnusen Clinical Center, 1988–1990

Clinical Fellowship: National Institute of Mental Health, 1980–1988

Residency: (Psychiatry) National Institute of Mental Health, 1980–1981

Residency: (Psychiatry) University of California at San Diego, 1978–1980

Internship: (Psychiatry, Neurology, Internal Medicine) Washington University School of Medicine, 1977–1978

M.D.: St. Louis University Medical School, 1977

B.S.: (Biology) University of Rochester, 1973

RESEARCH INTERESTS

My research focuses on the use of multimodal neuroimaging to investigate neural mechanisms—genetic, neurochemical, and others—relevant to neuropsychiatric conditions, such as schizophrenia, as well as to other conditions with genetic sources of cognitive and behavioral dysfunction, such as Williams syndrome. We also study other conditions impacting cognition such as normal aging and the effects of gonadal steroid hormones on brain function.

PIVOTAL EVENTS

I am not certain that I can identify a single turning point or even a few pivotal events, but it is my early experience as a physician that encouraged my already nascent fascination with the brain and drove my desire to be involved in research that had as its goal the amelioration of patients' suffering. The realization that what I could do to help my patients with serious mental illnesses such as schizophrenia was limited is what motivated me to come to the NIMH as a fellow and to continue this work.

MENTORING & WORK/LIFE BALANCE

I consider mentoring one of the most important responsibilities we in science and medicine undertake. It is through new, innovative colleagues that future advances will come to pass. Sharing my excitement at watching the living, working human brain in action as well as the wonder of seeing insights from neuroscience merged with those from human genetics is truly a pleasure and a privilege.

With regard to balancing family and work, I must say that having a supportive husband, who is extremely involved in our home life, has been extraordinarily helpful. The fact that he is also a scientist at the NIH also helps because we fully understand the special demands of each others' jobs.

Linda S. Brady, Ph.D.

Director, Division of Neuroscience and Basic Behavioral Science; Co-Principal Leader, NIH Roadmap Molecular Libraries Program

EDUCATION

Postdoctoral Fellowship: (Behavioral Pharmacology) Uniformed Services University of the Health Sciences, 1981–1983

Ph.D.: (Pharmacology) Emory University School of Medicine, 1981

B.S.: (Biology) Eckerd College, St. Petersburg, FL, 1976

RESEARCH INTERESTS

Neuropharmacology, CNS drug discovery, molecular and cellular neuroscience, neuroimaging, animal models, biomarker discovery and qualification, psychiatric disorders

EVENTS

In 1995, I had the opportunity to transition from a position as a laboratory scientist in the NIMH intramural research program to the extramural program at NIMH. I assumed leadership of the Neuropharmacology and Drug Discovery Program in the Division of Neuroscience and Behavioral Science at NIMH. I discovered that the position of program official or director for extramural research supported by NIH is both scientifically stimulating and challenging. I excelled in this position, assuming increasing roles and responsibilities. I now serve as the director of the extramural division in which I began my extramural research career and have assumed NIH-wide responsibilities with the NIH Roadmap for Biomedical Research and the Foundation for the National Institutes of Health (FNIH) Biomarkers Consortium.

MENTORING & FAMILY BALANCE

I have had the great opportunity of mentoring and working with a number of outstanding predoctoral and postdoctoral students, Howard Hughes Medical Institute–NIH Research Scholars Program medical students, and visiting research sci-

entists during my research career. In addition, I have recruited and mentored many scientists who now hold positions as extramural research science administrators at NIMH and other NIH institutes. It has been a rewarding experience for me to see these young scientists transition into significant leadership roles in biomedical research or administration in government, academia, and the biotechnology/pharmaceutical industry.

Della Hann, Ph.D.

Director, Office of Science Policy, Planning, and Communications, Office of the Director

EDUCATION

Postdoctoral Fellowship: (Emotion Processes Interest Area) John D. and Catherine T. MacArthur Foundation, Network on Early Childhood Transitions, 1989–1991

Ph.D.: (Experimental Psychology) University of Tennessee, 1986

B.A.: (Psychology) Catawba College, Salisbury, NC, 1981

RESEARCH INTERESTS

My research focuses on many aspects of mental health research including pathophysiology and etiology, diagnosis, intervention development and testing, real-world testing of interventions, service delivery, and burden of illness. Of particular interest are issues involved in developmental psychopathology for mental illnesses.

PIVOTAL EVENTS

In reflecting on this question, I would say that three sets of experiences were pivotal in shaping my professional career. First, I was fortunate to have strong mentorship during my college years. My major professor was able to build and guide my intellectual curiosity by teaching me the fundamental principles of scientific research and writing. Secondly, I had the very good fortune of obtaining a postdoctoral fellowship that not only honed my research abilities, but also provided and encouraged multidisciplinary thinking and fostered my communication skills. And third, were my early experiences here at NIMH as a program officer, where thinking on a broader level and developing initiatives that could have significant impact on a whole area of science, further increased my intellectual curiosity and expanded my ability to make a scientific and public health impact.

MENTORING & WORK/LIFE BALANCE

Being the recipient of good mentoring was absolutely critical to my career development. As such, I take the role of mentoring very seriously and have tried to carry forward these skills and values to a number of students, fellows, and colleagues. Each person has unique skills and experiences and finding ways to help them develop and advance is a very rewarding experience. One of the issues frequently raised in this context is balance—how does one balance competing work demands, family and personal demands? These choices and priorities can be challenging and often need adjustment over time. That said, key to my sense of balance is having a wonderfully and mutually supportive relationship with my husband. We both realize and appreciate the work ethic in each other and mutually thrive on the other's achievements. Maintaining this mutually supportive relationship is the focal point for balance in my life and career.

Ellen Leibenluft, M.D.

Chief, Section on Bipolar Spectrum Disorders, Emotion and Development Branch, Mood and Anxiety Disorders Program, Division of Intramural Research Programs

EDUCATION

Residency: Georgetown University School of Medicine, Department of Psychiatry, 1979–1982

Internship: Herrick Memorial Hospital, Department of Psychiatry, Berkeley, CA, 1978–1979

M.D.: Stanford University School of Medicine, 1978

B.A.: (Psychology) Yale University, 1974

RESEARCH INTERESTS

Brain mechanisms mediating bipolar disorder, and extreme irritability, in children and adolescents

PIVOTAL EVENTS

Approximately 10 years ago, a restructuring occurred at the intramural NIMH. This restructuring resulted in both an influx of new investigators and an emphasis on collaborative research across labs and branches. The new, more collaborative atmosphere provided me with opportunities to learn new skills, so that I could ensure that my science was truly cutting-edge. In addition, since I enjoy working as a member of a team, and am able to capitalize on the opportunities that a collaborative atmosphere provides, I became much more productive, and work was much more fun.

MENTORING & WORK/LIFE BALANCE

I think that a research career does pose more challenges for women than men, although I also like to think that this is changing over time. It is helpful to have both role models (people you can emulate in terms of how they balance career and work; these may be more likely to be women) and mentors (people who provide resources, expertise, supervision, etc.; these can be men or women but must be sensitive to the challenges faced by women scientists). With respect to balancing home and work, if you have a significant other, it is crucial that he or she values your work and is proud of it, rather than harboring resentment.

Molly Oliveri, Ph.D.

Director, Division of Developmental Translational Research

EDUCATION

Ph.D.: (Psychology) The Johns Hopkins University, 1975

A.B.: (Psychology) Trinity College, Washington, DC, 1971

RESEARCH INTERESTS

Cognitive, emotional, and neurobehavioral development: Application to understanding, preventing, and treating child and adolescent mental disorders

PIVOTAL EVENTS

A pivotal event shaping my career was joining the NIMH extramural research program. Prior to that, I had spent the 12 years since receiving my doctorate doing grant-supported research in an academic (medical school) setting. Coming into a scientific-administrative position at NIMH was a decided change: From a fairly single-minded research focus and fairly predictable days, to a multifaceted, multitiered organization with multiple claims on my time, and usually quite unpredictable days! Having previously enjoyed my calm and routine, I was surprised that I adapted as quickly as I did. I found that I had skills of which I hadn't been aware, and I came to enjoy the breadth and variety of the science that I dealt with and oversaw. The gratifications of extramural work are different, i.e., contributing to science and the public good by fostering the work of OTHER scientists (not ourselves), but they are no less meaningful.

MENTORING & WORK/LIFE BALANCE

I have had a number of mentors over my career, some official and others more informal. Each had particular wisdom to impart—some scientific and others administrative, some by words and others by example. One thing I have come to believe is that we can learn something valuable from almost anyone, if we keep our eyes and minds open, with the caveat that what we learn may not be what each of them intends to teach! I did not have mentors regarding balancing family and professional life—I had to make that up as I went along as a mother of two and also unmarried since my sons' early childhood. My best advice on this subject is that achieving the "balance" is crucial. One thing that helped me balance was arranging for care that would allow me to be in the office full-time, rather than trying to work from home. This helped me focus on work during working hours so that I could focus on my kids at other times. However one decides to manage this balance, it is well worth the effort.

Jane Ann Steinberg, Ph.D.

Director, Division of Extramural Activities

EDUCATION

Postdoctoral Studies: (Evaluation) Ohio State University, Nisonger Center, 1979–1980

Ph.D.: (Psychology) Syracuse University, 1979

M.A.: (Psychology) Syracuse University, 1978

B.S.: (Psychology) Tulane University, 1975

RESEARCH INTERESTS

Mental illness prevention and treatment

PIVOTAL EVENTS

My interest in science was developed by gifted teachers and sustained by NIMH's research to understand, prevent, and treat mental illnesses. This may sound as if I had one smooth career plan, but actually there was no plan. In fulfilling a requirement as an English major, chance (and a late start time) led me to Dr. Gordon Gallup's psychology class and lab. The science fascinated me, and I realized that conducting careful experiments to understand behavior would be a great career choice. As a scientist, it was essential to have a solid grounding in measurement, design, and statistics to work across the many areas in mental health research. Over my NIMH career, it has been a privilege to work with the Nation's finest researchers in fostering cutting-edge research in genetics, cognition, clinical diagnosis, and treatment.

MENTORING & WORK/LIFE BALANCE

Being mentored was a significant part of graduate training, but it was not a common practice when I entered the workforce. Clearly certain senior colleagues worked differently and better than others, but figuring out how to pick up their skills was not so easy! Today's more formalized mentoring and training opportunities make it much easier to ask and learn. As a mentor, it is rewarding to help newcomers think through options and set a course for themselves. I also find that serving as a mentor gives me a fuller understanding of what new staff in my shop will want and need to develop professionally.

Having a professional life made me a better parent, but high-quality, affordable day care made my professional life possible.

Esther May Sternberg, M.D.

Chief, Section on Neuroendocrine Immunology and Behavior and Director, Integrative Neural Immune Program, Division of Intramural Research Programs; Co-Chair, Intramural Program on Research on Women's Health, NIH

EDUCATION

Clinical and Research Fellowship: (Rheumatology) Royal Victoria Hospital, McGill University, Montreal, Canada, 1979–1980

Clinical Fellowship: (Rheumatology) Royal Victoria Hospital, McGill University, 1978–1979

Residency: (Medicine) Royal Victoria Hospital, McGill University, 1977–1978

Internship: (Straight Medicine) Royal Victoria Hospital, McGill University, 1974–1975

M.D.C.M.: McGill University, 1974

B.Sc.: McGill University, 1972

RESEARCH INTERESTS

Neuroendocrine immunology; central nervous system–immune system interactions (science of mind-body connection); hypothalamic-pituitary-adrenal axis (brain's hormonal stress response) and susceptibility to autoimmune/inflammatory and infectious diseases; interactions of bacterial toxins with glucocorticoid receptors and other nuclear hormone receptors (biodefense); stress and immune biomarkers in sweat in ambulatory human subjects, including women with depression.

PIVOTAL EVENTS

I saw a patient in my last year of clinical rheumatology fellowship training (1979) who changed my career path. He had developed an inflammatory scarring autoimmune disease while being treated for epilepsy with a drug that changed brain serotonin. This case convinced me that the brain and the immune system were connected. Although this notion was not accepted by the medical community at that time, my mentors at McGill University—the Chief of Rheumatology, the Chair of Medicine and a colleague in biochemistry—all had faith in me and gave me the resources and the training to study this case. This led to my first paper being published as a lead article in the *New England Journal of Medicine* in 1980. My subsequent research has always been driven by an effort to understand the brain-immune connection. That first case turned out to be the first case of a syndrome that swept the country in 1989 related to impure L-tryptophan. As a result, I led the NIH team together with FDA and CDC scientists to identify the etiology and pathogenesis of that syndrome. Most recently I have found that bacterial toxins like anthrax lethal toxin repress the glucocorticoid and other nuclear hormone receptors and this may contribute to their toxicity. In every case, I was motivated by the public health and have always felt that it is my responsibility as an NIH intramural scientist to turn my research skills to address issues of immediate public health concern.

MENTORING & WORK/LIFE BALANCE

In my own life, I have been fortunate to have had several outstanding mentors, starting with my father who was a physician and scientist, an aunt who is a professor of physiology, and others throughout my high school, college, medical school, and postdoctoral training. At each stage, my mentors did not push me into science or medicine, but showed me the way and opened up opportunities for me. I have therefore always tried to do the same for the young people whom I mentor. While I do not consciously make an effort to select young women as trainees, women have always been a majority of the trainees in my lab.

I have a daughter who is now 26 years old and independent in her own career and family. When she was young, it was difficult to balance career and family, but I never had any doubts that her health and well-being came first. This attitude gave me an important sense of perspective regarding my work, and allowed me to take creative risks that I might not otherwise have taken. While at work I worked very hard, often taking no breaks even for lunch so that I could get home in time for dinner. After her bedtime, I worked at home late into the night. I limited my work-related travel to one meeting per year, and when she was old enough, would take her with me to meetings. I drove carpool every morning throughout her school years, which gave us special bonding time together. As much as possible I also had live-in students' help. The most important advice I can give to

young women trying to juggle career and family is to get lots of support from family and friends, home or daycare providers, and have as much flexibility as possible in your career. An academic-style career where you have the flexibility to work from home is very helpful with young children.

Ellen Stover, Ph.D.

Director, Division of AIDS and Health and Behavior Research

EDUCATION

Ph.D.: (Psychology) Catholic University, Washington, DC, 1978

B.A.: (Psychology) University of Wisconsin, 1972

RESEARCH INTERESTS

Primary and secondary prevention of HIV/AIDS, domestically and internationally; neuropsychiatric aspects of HIV/AIDS; reducing the effects of cognitive deficits in people with schizophrenia through the development of novel compounds; development of behavioral approaches to reduce risky behaviors, stigma, comorbidity in people with mental illnesses; and to increase adherence to both HIV and psychotropic medications

PIVOTAL EVENTS

There are several pivotal events that occurred in my life. The first was the death of my brother, Randy, as a result of a drunk driver when I was 19 years old. As the oldest child of four, I felt that I needed to do something meaningful. I have been working since I was 17 and in the early 1980s the AIDS epidemic hit the United States. I was called upon to spearhead the NIMH effort in 1983 and have continued to do so. I have typically held more than one job most of my career and spent 4 years working full-time and going to graduate school full-time. The most recent event that has had a great impact on my life and my career was the murder in 2006 of a close colleague, Wayne Fenton. I stepped in and ran his division and my own for 10 months.

MENTORING & WORK/LIFE BALANCE

I have been fortunate to have my family nearby. They and housekeepers helped me raise three children, one of whom is named for my brother. One way I balanced my responsibilities was to keep my travel, even overseas, very brief. I also live very close to my office so that I could go home at lunchtime when my children were very young and feed them or drive a carpool to nursery school. I have also had supervisors who were very flexible long before some of the new programs were available. I have trained and mentored many staff in my 36 years of government service. Many are in visible positions within NIH, Substance Abuse and Mental Health Services Administration (SAMHSA), Health Resources and Services Administration (HRSA), CDC, and in private foundations.

National Institute of Neurological Disorders and Stroke

Story Landis, Ph.D.
Director

EDUCATION
Ph.D.: (Biology)
Harvard University, 1973

M.S.: (Biology)
Harvard University, 1970

B.S.: (Biology)
Wellesley College, 1967

RESEARCH INTERESTS
Throughout her research career, Story Landis has made many fundamental contributions to the understanding of developmental interactions required for synapse formation and plasticity of signaling mechanisms in the nervous system. Her notable achievements are in both scientific discovery and the creation and revitalization of scientific programs. She has always loved working in the laboratory and finding the unexpected, but has also served in a number of important administrative positions in academia, scientific societies, and the NIH. Each of these opportunities have allowed her to make substantial contributions to the advancement of science.

PIVOTAL EVENTS
"My most formative experience was performing my undergraduate research project. My advisor had a very clear notion as to what the outcome of the experiment should be. She was wrong however, as the results were completely different than what she had expected, but were consistent with work in other systems. The ability to ask a question and find an answer that was completely unexpected was transforming."

MENTORING & WORK/LIFE BALANCE
"One of my proudest achievements is my 37 years of marriage to a very supportive husband and raising an independent and successful son."

INSIGHTS
A native of New England, Landis received her undergraduate degree in biology from Wellesley College in 1967. When she applied for graduate school, someone on the admissions committee asked if she were accepted, would she finish her Ph.D.? At the time, she didn't recognize the question as reflective of expectations that women in science might not be successful. She was accepted to the graduate school at Harvard University, where she conducted research on cerebellar development in mice to earn her master's degree (1970) and Ph.D. (1973). After postdoctoral work at Harvard University studying transmitter

plasticity in sympathetic neurons, she served on the faculty of the Harvard Medical School Department of Neurobiology.

In 1985, she joined the faculty of Case Western Reserve University School of Medicine in Cleveland, Ohio, where she held many academic positions, including Associate Professor of Pharmacology, Professor and Director of the Center on Neurosciences, and Chairman of the Department of Neurosciences, a department she was instrumental in establishing. Under her leadership, Case Western's neuroscience department achieved worldwide acclaim and a reputation for excellence.

Landis joined the NINDS in 1995 as Scientific Director and worked with then-Institute Director Zach W. Hall, Ph.D., to coordinate and re-engineer the Institute's intramural research programs. Between 1999 and 2000, under the leadership of NINDS Director Gerald D. Fischbach, M.D., she led the movement, together with NIMH Scientific Director Robert Desimone, Ph.D., to bring some sense of unity and common purpose to 200 laboratories from 11 different NIH Institutes. In September 2003, she was selected as director of NINDS. In 2007, Landis was named Chair of the NIH Stem Cell Task Force. She has garnered many honors and awards and is an elected fellow of the Academy of Arts and Sciences, the American Association for the Advancement of Science, and the American Neurological Association. In 2002, she was named the President-Elect of the Society for Neuroscience.

Emmeline Edwards, Ph.D.

Deputy Director, Division of Extramural Research

EDUCATION

Postdoctoral Training: (Behavioral Pharmacology and Neuroscience) SUNY, Stony Brook, 1983–1985

Ph.D.: (Neurochemistry) Fordham University of Arts and Sciences, 1983

M.S.: (Biochemistry) Fordham University of Arts and Sciences, 1978

B.A.: (Chemistry) College of New Rochelle, 1974

RESEARCH INTERESTS

Behavioral and cognitive neuroscience

PIVOTAL EVENTS

I currently serve as Deputy Director for the Division of Extramural Research (DER) at NINDS. In that capacity, I contribute to the advancement of the basic and clinical brain and behavioral sciences throughout NINDS and NIH and provide administrative oversight to DER. I promote the use of portfolio analyses for the scientific programs of NINDS and ensure NINDS' participation in NIH Roadmap and Blueprint activities. I also maintain programmatic involvement in the areas of behavioral and cognitive neuroscience.

Both my academic and research program at the University of Maryland in the areas of neuroscience, pharmacology/molecular genetics and positions as Program Director of Behavioral Neuroscience at the National Science Foundation and NINDS, have given me a well-rounded perspective on a broad range of scientific disciplines and have provided a solid foundation for my current role as the Deputy Director for the NINDS Extramural Research Program. These experiences have provided excellent preparation for joining the NINDS Institute Director and senior staffs in assuming responsibility for the planning, administration, and evaluation of the research programs supported by the Institute.

MENTORING & WORK/LIFE BALANCE

I have been actively involved in neuroscience education and outreach for the past 25 years. Most recently, these efforts have been coupled with my involvement in the Federal Government, first at the National Science Foundation and in my present capacity at the NIH. I have participated for many years in the NIH-funded Minority High School Research Apprentice Program where I served as research mentor to a number of minority students. Many of these students have participated in various research projects in my laboratory and have been included on publications of abstracts and peer-reviewed articles. While at NIH, I have continued my involvement with the Meyerhoff Scholarship Program of the University of Maryland at Baltimore County (UMBC), a program that is nationally recognized for graduating some of the brightest and most talented minority students in the sciences. I have mentored a number of Meyerhoff fellows and served as research mentor, friend, and resource for these burgeoning young scientists. In the past 3 years, I have worked closely with the NINDS Program Directors and Program Analysts to foster the establishment and development of Analyst Mentoring Program for Extramural Research Excellence (AMPERE), a mentoring program for the analysts at NINDS as well as skill training in scientific and management strategies.

INSIGHTS

I have played a pivotal role in the development and implementation of NINDS scientific initiatives on cognitive dysfunction in neurological disorders and cognitive rehabilitation strategies. Under my leadership, NINDS has awarded a contract to the University of California, San Francisco (UCSF)/Memory and Aging Center (N01-NS-6-2366) to develop and validate a battery of domain-specific tasks for Executive Function (EF). This contract is of considerable value

to many of NINDS current and future research programs in neurological disorders where dysfunction in cognitive processes are integral components of functional outcomes and quality of life for affected patients. At the completion of this 5-year contract, the NINDS EXAMINER (Executive Abilities: Methods and Instruments for Neurobehavioral Evaluation and Research) will be available in the public domain and will be used in NINDS-sponsored clinical trials and clinical research where EF is used as a primary or secondary outcome.

With these recent experiences and with former involvement in academic and research endeavors, I have demonstrated that leadership and drive to excellence have been an integral part of her success. Consistent and effective participation in trans-NIH committees and professional organizations, targeted outreach, and professional development have provided the networking opportunities that are so important in a woman scientist's career.

Mary Kay Floeter, M.D., Ph.D.

Acting Clinical Director; Chief Electromyography Section, Division of Intramural Research

EDUCATION

Senior Staff Fellow: (Neural Control) NINDS, 1990–1993

Postdoctoral Fellowship: (Physiology) University of California-San Francisco, 1989–1990

Residency: (Neurology) University of California-San Francisco, 1986–1989

Internship: (Medicine) Jewish Hospital, St. Louis, 1985–1986

M.D.: Washington University School of Medicine, St. Louis, 1985

Ph.D.: (Neurosciences) Washington University School of Medicine, St. Louis, 1985

Graduate studies: (Biology) University of Illinois, 1979

B.S.: (Psychology) University of Illinois, Urbana, 1978

RESEARCH INTERESTS

Neurological disorders that cause impaired voluntary movement and physiology of spinal circuits that control movement.

PIVOTAL EVENTS

I have been very lucky that teachers gave me opportunities to work in their labs and to follow ideas of my own. The first was one of my college professors, Bill Greenough. After his enthusiastic lecture describing a new scientific discovery—plasticity of ocular dominance columns—he mentioned that he had openings for two students to work in his lab. Being interested, but quite naïve, I volunteered, bringing him a popular magazine article about brain plasticity in rats reared in complex environments: I thought he might be interested in the topic. It turned out to be his own area of research but the article described the work of a competitor! Nevertheless, he took me on, and helped me formulate a study on cerebellar plasticity that developed into an undergraduate thesis project. This started my career as a scientist, and numerous others have since helped me along the way.

MENTORING & WORK/LIFE BALANCE

In my experience, no single person can provide mentoring in all aspects of a scientific career. From the handful of scientists who mentored me, some provided examples of how a scientist works, others showed how to look beyond the experimental data to the bigger picture, and others gave practical advice for job preparation and opportunities to enter into the community of scientists. For the students and fellows who have worked with me at NINDS, I encourage high aspirations, and celebrate their successes as my own.

INSIGHTS

In college, I worked in the laboratory of Bill Greenough at the University of Illinois. He was a generous mentor, who encouraged his students to help each other as well as to do their own experiments. Helping others was a quick way to learn about many different experiments. I helped graduate students to run rats with split-brains through mazes, raise rat pups in total darkness, and sliced and stained brains for my own study measuring how early rearing affected nerve cell branching. These kinds of experiments, done by many scientists in the 1970s, were instrumental in showing that experience could change the connections in the brain. I became interested in the possibility of applying brain plasticity to people, and soon realized that I would need to obtain training in medicine. This led me to Washington University in St. Louis, where I was accepted into an M.D. and Ph.D. program. This was a 6-year program in which periods of medical school were interleaved with laboratory rotations. I did my thesis work with Ted Jones, a gruff but visionary anatomist. We used transplantation of slivers of fetal rat brain to test whether the ability of nerve cells in the cerebral cortex to connect up properly with distant regions during development was encoded in the nerve cells or their path—of course, it was a bit of both! After completing the thesis and medical school, I married and moved west to do residency training in neurology at UCSF. From seeing patients with involuntary movements that resembled fragments of coordinated

movements, I became intrigued with the idea of using spinal neuronal circuits that can produce simple movements to help patients with brain diseases that cause loss of movement. That was why I came to NIH, to the National Institute of Neurological Disorders and Stroke, one of the few places in the country dedicated to finding new ways to treat patients using discoveries made in the basic science laboratories. The work is starting to come around almost in a full circle, as we learn that even simple spinal circuits can be modified by experience and training. I'm still traveling this road, and hope to attain a few milestones as I go. In the meantime, the work is fun, the journey is gratifying, and I would encourage young students to travel a similar path.

Audrey S. Penn, M.D.

Senior Advisor to the Director

EDUCATION

M.D.: Columbia University's College of Physicians and Surgeons, 1960

B.A.: (Chemistry) Swarthmore College, 1956

RESEARCH INTERESTS

Neuroimmunology; neuromuscular diseases

PIVOTAL EVENTS

Important aspects of my development as a scientist were opportunities to link the science to the diseases, collaborations with excellent basic scientists, and working in a supportive environment.

MENTORING & WORK/LIFE BALANCE

Mentoring requires interest in promoting the capacity and the careers of young physicians and scientists. I come from a family of teachers, many of whom were mentors. I have had the opportunity to mentor medical students and residents.

INSIGHTS

Major milestones in my career include becoming a tenured professor of neurology and a Director of the American Board of Psychiatry and Neurology, which were evidence that I was a sound and knowledgeable neurologist–clinician. Another important event in my career was the chance to serve the field of neurology as the President of the American Neurological Association, which recognized my previous work for the organization and indicated the trust of my colleagues. Finally, I was proud to be named the Deputy Director of the NINDS with two periods as Acting Director.

Judith Richmond Walters, Ph.D.

Chief, Neurophysiological Pharmacology Section, Division of Intramural Research

EDUCATION

Ph.D.: (Pharmacology) Yale University School of Medicine, 1972

B.A.: (Biochemistry) Mount Holyoke College, 1966

RESEARCH INTERESTS

Basal ganglia function, dopamine, multisecond oscillations, thalamocortical circuits, Parkinson's disease, movement disorders, Tourette Syndrome, attention-deficit hyperactivity disorder

PIVOTAL EVENTS

I was the one my father took fishing, even though I had an older brother and sister. Somehow the message was—I was competent. It didn't matter that I was a girl.

When I started graduate school at Yale in 1967, I learned that only one woman had ever graduated from my department. However, there too, I found acceptance, encouragement, and fascinating questions to explore. I got to fish for dopamine neurons, and was in the right place at the right time to be the first to record the activity of these neurons in a living rat brain. These were pivotal and inspiring events that got me hooked on a life of scientific inquiry into how the brain works.

MENTORING & WORK/LIFE BALANCE

After my first son was born, I returned to work in 2 weeks because I had said I would, but I was amazed at how hard it was to leave him. With my second son, I thought about working part-time, but realized I wouldn't really be able to leave work early. By the third son, I was ok with handing him to the babysitter and spending time in the lab. It took me a while to get comfortable with the dual roles. Today my sons say they are proud to have a scientist mother and I watch with great satisfaction as they follow their own passions in science, journalism, and music.

I feel very fortunate to have been able to continue doing research while enjoying mothering. The balancing act is certainly challenging! Now I cheer on the talented women who come through my lab as they cope with all the options available to them today.

INSIGHTS

NIH provides a wonderful opportunity for women to focus their efforts on research in an environment where basic and clinical investigators can collaborate to solve medical problems. When I first came to work in the NINDS I had the good fortune to join the Experimental Therapeutics Branch, run by Dr. Thomas Chase. This Branch was organized around the "bench to bedside" concept. My group's niche has been to use neurophysiological techniques applied to rodent models to investigate how the brain changes when dopamine neurons die in Parkinson's disease and how these changes may be alleviated with therapeutic interventions. We have had the satisfaction of making progress in understanding how the dopaminergic system modulates information flow in basal ganglia networks, and how to compensate for alterations in brain function induced by the loss of dopamine. It is hard to beat a career that combines the thrill of scientific discovery with the satisfaction of trying to reduce the burden of disorders like Parkinson's disease.

Susan Wray, Ph.D.

Chief, Cellular and Developmental Neurobiology Section, Division of Intramural Research

EDUCATION

Ph.D.: (Neurobiology and Anatomy) University of Rochester School of Medicine and Dentistry, 1984

M.S.: (Anatomy) University of Rochester School of Medicine and Dentistry, 1982

B.A.: (Biology and Psychology) Middlebury College, 1978

RESEARCH INTERESTS

Our research is focused on understanding the development of the Gonadotropin hormone-releasing hormone (GnRH-1) neuroendocrine system. This system controls reproductive function in all vertebrates. Disruption of development or regulation of the GnRH-1 system results in reproductive dysfunction. Our research programs examine 1) the GnRH-1 progenitor and factors that influence establishment of this cell phenotype (neuronal differentiation), 2) molecules that direct GnRH-1 cells to their final destination (neuronal migration), and 3) mechanisms that initiate the GnRH-1 secretory profile (synchronized neuronal activity).

PIVOTAL EVENTS

Throughout my career, I maintained an active role in teaching, either through involvement in courses (neurobiology, Marine Biological Laboratory, Woods Hole), dissertation committees, or training of students (high school to postgraduate). Teaching profoundly molded my openness to new ideas as well as my ability to communicate and listen—all of which are important attributes for doing outstanding science. As a postdoctoral fellow, my research took a dramatic turn when I asked a simple question—when was the system that I was interested in established? I discovered that these neurons developed outside the central nervous system and thereafter migrated into the forebrain to form an adult-like distribution at birth. This was a novel observation and explained a human disorder. Since my initial description, work in this area has expanded to many laboratories. For myself, my research interests now span across two interconnected fields, developmental neurobiology and systems neurobiology.

MENTORING & WORK/LIFE BALANCE

Mentoring is one of the true benefits of being a scientist. Seeing others develop into young scientists is an important aspect of my career and one I truly enjoy. From many of these interactions, friendships develop that are important scientifically but also personally. Because of my career choices I had a child late in life. Balancing family and professional responsibilities is simply not easy, no matter when one makes this choice. Having both in my life now is wonderful and stressful, but made me more aware of life choices of others.

INSIGHTS

One chooses a scientific career for personal reasons. It is a unique career that one can get great satisfaction from. I still am eager to get to the lab and discuss new experiments. However, early in my career, I quickly found that the number of women in science decreased as a function of career level. This exposed me to the female factor for committee work, which although now decreased, still exists. A strong consideration for a career in science is that one can (though it is not an easy task) achieve a balance between family and profession at many different levels and the choice can change as one's life changes. However, it is still clear that women should be encouraged to go beyond the postdoctoral level and continue in some aspect of scientific research.

NINDS

Debra J. Babcock, M.D., Ph.D.

Medical Officer and Program Director, Systems and Cognitive Neuroscience Cluster, Division of Extramural Research

EDUCATION

Fellowship: (Movement disorders) Washington University at St. Louis, 1999–2000

Fellowship: (Basic neuroscience) University of Chicago, 1996–1997

Residency: (Neurology) University of Chicago, 1993–1996

Internship: (Internal Medicine) Loyola University, 1992–1993

M.D.: University of Illinois at Chicago, 1992

Ph.D.: (Psychology) Rush University, 1990

B.A.: (Behavioral Sciences) University of Chicago, 1981

RESEARCH INTERESTS

Cognitive processing, movement disorders

PIVOTAL EVENTS

My most pivotal event occurred early on in high school. Having been raised in a blue-collar, lower income family, I had no intention of going to college. No one in my family had ever gone and there was no incentive for me to do so. At the age of 17, I had a part-time job, a fiancée, and no vision for the future. What I did have was a caring and dedicated guidance counselor, who looked at my grades and SAT scores and told me that I MUST go to college. As a lark, I filled out one college application to a very competitive school and said I would go IF I got a full scholarship. Shockingly, I got in and was hooked after 3 months. Now, a Ph.D., M.D., and fellowships later, I wonder at my incredible luck, shudder at what might have been, and bless that guidance counselor regularly.

MENTORING & WORK/LIFE BALANCE

As a Program Director, one of my primary jobs is to advise grant applicants on how to obtain funding. This includes notifying investigators of funding opportunities, answering application questions, helping applicants interpret and respond to summary statements, and helping grantees trouble-shoot problems once they do get funded. In this capacity, I have the opportunity to be a mentor every single day. It is particularly rewarding to assist students with their initial funding needs, and sometimes all the way to their first R01. Memories of my own utter confusion and struggles with the grant process make this an especially satisfying part of my job.

I don't have children, which makes the balancing of family and professional responsibilities much easier. But most of us have very full lives outside of the office as well as in, and I find that little things like eating lunch at my desk can sometimes make a big difference.

Robin Andrea Conwit, M.D.

Program Director, Clinical Trials Cluster, Division of Extramural Research

EDUCATION

Fellowship: (Electromyography) NIH, 1989–1991

Residency: (Neurology) George Washington University, 1986–1989

M.D.: University of Buffalo, 1985

B.A.: (Biology) Colgate University, 1981

RESEARCH INTERESTS

Interventional trials involving emergency neurology to neuromuscular diseases

PIVOTAL EVENTS

A 31-year-old mother of two young children who presented to clinic with amyotrophic lateral sclerosis (ALS), quickly evolved from leading an active athletic and intellectual life to becoming wheelchair-bound in 3 months, and dying 6 months later left a strong impression on me. I am currently the program director for 6 ALS clinical trials, the Emergency Network, and for 25+ other clinical trials, primarily Phase III trials. At the extramural division at NINDS, I quickly learned a great deal about clinical trials when a unique opportunity was presented by a potential trial to study a biological compound in ALS. I found out how to set up a study quickly using a biological compound with multilevel involvement, starting with an organizing meeting at NINDS to bring together the investigators, working closely with NINDS communications, consulting three involved pharmaceutical companies, and patient support groups. After a followup meeting, we were ready to proceed with a trial protocol and manual of operations. As a result of these collaborations, we discussed the future of prioritization in ALS clinical trials and cohosted a collaborative meeting with ALS Association (ALSA) in order to discuss rational choice of therapeutics using the Committee to Identify Neuroprotective Agents for Parkinson's (CINAPS) model, now published in *Neurology*. This project matured into a formal pharmacologic review of potential agents, two international presentations and a manuscript.

In developing an emergency clinical trials network, I first organized an emergency clinical trials workshop with leaders in emergency medicine, neurology, neurosurgery, and neurointensive care to highlight exceptional ideas for potential

trials and to look at the economies of scale. This large effort is supported by NINDS, in conjunction with Health & Human Services, Department of Defense, COUNTERACT, and Biomedical Advanced Research & Development Authority agencies. These collaborations have been pivotal for the success in establishing the first Emergency Network in Neurology.

I am interested in developing further experience and leadership skills in neurology and would like to pursue more advanced courses in the Johns Hopkins program in public health and further leadership training. I also have numerous activities related to teaching and clinical neurology. As a neurology board examiner, I maintain clinical neurology skills and also am currently lecturing in the neurophysiology series at Georgetown and hold a faculty appointment as Associate Professor of Neurology at Georgetown.

MENTORING & WORK/LIFE BALANCE

Mentoring has provided a wonderful opportunity to work with many young and mid-career neurologists and clinical trialists. It has been a privilege to interact with over 20 developing clinician scientists and over 100 medical students and fellows at NIH and Johns Hopkins.

Young women in particular often ask me how I manage to accomplish my goals while raising young children. My most recent thoughts are that the prioritization and flexibility necessary in parenting are skills that translate well at work. Furthermore, developing listening and interpersonal skills with teachers, coaches, and other mentors for my children have only helped me work well with clinical and basic scientists alike. In summary, balancing my family and professional responsibilities has been synergistic.

Diane DiEuliis, Ph.D.

Program Director, Neurodegeneration Cluster, Division of Extramural Research (Former)

EDUCATION

Certificate in Legislative Studies: Government Affairs Institute, Georgetown, 2005

Ph.D.: (Biology) University of Delaware, Newark, 1994

B.A.: (Biology) University of Delaware, Newark, 1988

RESEARCH INTERESTS

As a program director, I manage a grant portfolio on Parkinson's disease (PD) research; the science is focused on genetic and cell biological studies, as well as protein misfolding, aggregation, and clearance in a variety of other neurodegenerative diseases. In addition, I manage translational, clinical, and fellowship studies.

PIVOTAL EVENTS

The discovery of the first gene linked to Parkinson's disease dramatically changed the scientific landscape of research on a disease long thought to be caused by environmental exposures. The gene, synuclein, was discovered shortly before I became a program director at NINDS. A big challenge following this finding was to understand the cell biological pathways that contributed to the pathophysiology of the disease, based on the underlying genetic mutations. Such an understanding could lead to therapeutic interventions and potential treatments. I developed a program focused on stimulating this area of research, and the portfolio now includes a wide variety of cellular studies, not only on synuclein, but on the many additional proteins found to be genetically mutated in familial Parkinson's. These studies helped pave the way for the many translational studies that are now ongoing in the PD research field, and enabled me to help form a therapeutics program for PD that includes animal testing of potential therapies, and pilot studies of potential therapeutics in patients that may be suitable for large-scale clinical trials.

During my tenure as Program Director for the Parkinson's portfolio, I helped develop several planning agendas for guiding research on PD. These plans also helped to stimulate research in the field, and helped broaden the interest in patient-oriented studies, including research on their primary quality of life concerns. I initiated a trans-agency Parkinson's coordinating committee, which enables all the NIH Institutes, the U.S. Department of Defense (DOD), and the VA, to share the content of their PD portfolios, ensure that there is not overlap, and collaborate on important cross-agency initiatives where most appropriate.

MENTORING & WORK/LIFE BALANCE

Since I've been a program director, I've had the benefit of mentoring two excellent program analysts. Program analysts at NINDS are responsible for coding and analyzing the research grant portfolios, helping with administrative management of grants, and coordinating many of the conferences and meetings sponsored by NINDS. Both individuals that I mentored in this area have moved onto higher positions after doing programs in the Parkinson's portfolio; while it is sad when they leave, it is a pleasure to watch them grow and develop their interests into new and more challenging arenas.

Balancing a personal life is always hard because the demands of science are frequently time-consuming. However, I find that working in the field of neurodegenerative disease is seen by my close family and friends as an extremely important endeavor. They are very accepting and supportive of the work I do because

there are few individuals who are untouched by these diseases in their own lives, and many have had personal experience with a family member who may be suffering.

Katrina Gwinn, M.D.

Program Director, Neurogenetics Cluster, Division of Extramural Research (Former)

EDUCATION

Fellow: (Parkinson's Disease and Movement Disorders, Neurology Department) Mayo Clinic Scottsdale, 1995–1996

Resident: (Department of Neurology) University of Michigan Hospitals, Ann Arbor, 1992–1995

Intern: (Internal Medicine) Vanderbilt University Medical Center, 1991–1992

M.D.: Vanderbilt University School of Medicine, 1991

B.A.: (Psychobiology) Wellesley College, 1982

RESEARCH INTERESTS

My research interest include genetics of neurological disorders including Parkinson's, stroke, epilepsy, and motor neuron disease. I am also interested in the ethics of genetic research in complex diseases.

PIVOTAL EVENTS

Out of many, one particularly valuable experience influencing me was working for Nobel Laureate Phil Sharp (MIT), who discovered RNA splicing. This experience taught me that science is a field of thought, not merely technique. It allowed me to consider crossing the translational divide before it was described as such. This experience was helpful in allowing me to think about what questions to ask in my career in Parkinson's genetics, where I used laboratory and clinical science to inform each other. My clinical and pathological characterization of mendelian kindreds with Parkinson's disease (*Neurology*, 2000; *Acta Neuropathologica*, 2000; *Lancet*, 1999) led to laboratory-based gene discovery (*Hum Molec Gen*, 1999; *Science*, 2003). Subsequently, genotype-phenotype studies of ethnic differences were possible (*Neurology*, 2000; *Arch Neurology*, 2001). This knowledge was returned to the clinic by my team (a CLIA genetic test for those at risk; *Clinical Genetics*, 2004; *Mov Disord*, 2005).

MENTORING & WORK/LIFE BALANCE

Mentoring and teaching are fundamental to my career. I have mentored many successful individuals including Judy Chen (LEAP awardee, health disparities), John Goudreau (NINDS grantee), Jennifer DeWolfe (Epileptologist, Alabama) Shamaila Waseem (Pediatric Neurology, Florida), and Gerry Evidente (Mayo Clinic) to name a few. My dedication to teaching continues in ongoing faculty service including Cold Spring Harbor Laboratory's Neurodegeneration course, NIH's "Demystifying Medicine," and as director for the American Academy of Neurology Course, "Career Development Grants," among others.

A particularly influential personal issue is that of my father's Parkinson's disease. He developed this disease after I was well on my way into that field professionally. Dealing with this not as a doctor, or researcher, but as a daughter, has lent humility and urgency to the work that I do.

On a final note, I find that assuring balance between personal and professional life is essential to maintain creativity in the workplace.

Ramona R. Hicks, Ph.D.

Program Director, Repair and Plasticity Cluster, Division of Extramural Research

EDUCATION

Ph.D.: (Neuroscience) University of Connecticut Health Sciences Center, 1993

M.A.: (Physical Therapy) Stanford University, Stanford, 1976

B.S.: (Biology) University of California, Santa Cruz, 1973

RESEARCH INTERESTS

Traumatic brain injury, cerebral palsy, neural plasticity and recovery, global health and underserved populations

PIVOTAL EVENTS

Early in my career as a physical therapist, I was told "not to fix if it ain't broke" and this statement made me realize that I was interested in making things better. Research is fundamental to making improvements in health care, and this early experience working with patients in hospitals inspired me to become an independent research neuroscientist.

MENTORING & WORK/LIFE BALANCE

Mentoring is a lifelong process and critical to success. I have learned valuable information from people more senior than myself, as well as from my students. Although formal mentoring programs can be useful, I found informal networking and collaborations to be more valuable.

The competing demands of family and professional responsibilities are a major, if not the major roadblock for women

in science. In my view, all of the easy fixes to this problem should be implemented, but in addition, we must strive to change the entire scientific research culture in order to overcome this hurdle.

Deborah Hirtz, M.D.

Scientific Team Leader, Office of Clinical Research, Division of Extramural Research

EDUCATION

Residency: (Child and Adult Neurology) Children's National Medical Center and George Washington University Hospital, 1976–1979

Residency: (Pediatrics) Children's National Medical Center, Washington DC, 1973–1976

M.D.: Hahnemann Medical College, 1973

B.A.: (Biology) University of Chicago, 1969

RESEARCH INTERESTS

Clinical trials and studies in pediatric neurology, especially cerebral palsy, epilepsy, autism, stroke, neonatal neuroprotection, and head trauma.

PIVOTAL EVENTS

The NINDS Collaborative Perinatal Project (NCPP) was a landmark study that enrolled over 50,000 pregnant women and followed their offspring until age 7. The primary purpose was to examine the causes and risk factors for childhood epilepsy and cerebral palsy. When I first came to work at the NINDS, I was involved in the analysis of some of the data from this unique study, which taught me the value of questioning assumptions about causation and prognosis. For example, this study showed that cerebral palsy was for the most part not a result of asphyxia at birth, and febrile seizures in children, though common, were generally benign and in many cases did not require treatment. I learned that well-planned and -executed studies may provide surprising and crucial information by which to guide good clinical practice in treatment or prevention of serious diseases and conditions, and that NINDS could provide a leadership role in helping to see that such studies come to fruition.

MENTORING & WORK/LIFE BALANCE

When I first came to work at the NINDS, I had the benefit of being mentored so was able to plan and evaluate what could become appropriate and useful clinical studies. In the extramural program at the NINDS, there are abundant opportunities to mentor investigators with regard to specific projects who are either at very junior levels or at midlevel in career development, but just beginning to undertake major clinical trials and studies. Opportunities also come though training programs and staff efforts targeted at individuals as well as groups, and many relationships, once established, continue as careers develop.

With regard to the special needs of women balancing career and family responsibilities, the NIH has always been a supportive environment, which has allowed me to successfully combine a career in clinical research, an opportunity to continue to practice my specialty on a limited basis, and to raise three children. There will always be some areas of compromise and each individual needs to seek a comfortable balance, but the obstacles are not great and the rewards well worth the effort.

Naomi Kleitman, Ph.D.

Program Director, Repair and Plasticity Cluster, Division of Extramural Research

EDUCATION

Ph.D.: (Neural & Behavioral Biology) University of Illinois, Urbana-Champaign, 1985

M.A.: (Psychology) University of Illinois, Urbana-Champaign, 1980

B.S.: (Zoology) University of California, Davis, 1977

RESEARCH INTERESTS

Spinal cord injury and peripheral nerve (injury and repair), axonal regeneration and glial cell biology, translation of basic science findings to clinical trials

PIVOTAL EVENTS

I was fortunate to have mentors, both male and female, who taught by example and offered me opportunities and encouragement to expand my scientific interests. My high school biology teacher gave me encouragement and an opportunity to work at a National Aeronautics and Space Administration (NASA) laboratory on an individual study project. My postdoctoral mentors, Drs. Richard and Mary Bunge, both respected the strengths I brought to their laboratories and taught me new techniques and approaches. The Miami Project to Cure Paralysis not only grounded me in spinal cord injury (SCI) research, it brought me into contact with many individuals who had sustained this injury and their loved ones. The need for communication with this community, and within the scientific communities involved in SCI research became a new focus. I took on roles as spokesperson for over a dozen research laboratories and organizer within the SCI research community, which further expanded my horizons.

MENTORING & WORK/LIFE BALANCE

My mentors, both formal and informal, have provided me with abundant examples of different scientific approaches and personal styles. Twice, I have worked in laboratories directed by married couples, and seen how this can either strengthen or disrupt the lab environment. Overall, mutual respect of team members as individuals seems most productive. In turn, I have tried to be open to the individual needs and preferences of those who have looked to me for mentorship. I have been a mentor for colleagues, students, administrative staff, and through the Society for Neuroscience mentoring program. At NINDS, I have trained my cluster colleagues, coordinated a training course for new staff, and received a MERIT Award for mentoring. Mentoring works best when new challenges are undertaken in an environment that encourages one to ask questions and seek feedback. This takes time and effort but is usually quite rewarding.

Christy Ludlow, Ph.D.

Chief, Laryngeal and Speech Section, Division of Intramural Research

EDUCATION

Ph.D.: (Speech-pathology and Psycholinguistics) New York University, 1973

Certificate of Clinical Competence: (Speech Language Pathology) New York University Institute of Rehabilitation Medicine, 1969

M.Sc.: (Speech-pathology and Audiology) McGill University, Montreal, Canada, 1967

B.Sc.: (Physiological Psychology) McGill University, 1965

RESEARCH INTERESTS

Speech, voice, and swallowing disorders

PIVOTAL EVENTS

When I first came to the NIH, I had the unique experience of working in the NINDS Extramural Program with the purpose of initiating research in speech and language disorders, an emerging discipline at that time. This experience provided me with a broad overview of where the opportunities lay for initiating significant advances in these fields, which I was able to put into practice when I moved to the Intramural Program several years later. Since that time, I have been able to interface my areas of interest, speech, voice, and swallowing, with integrative systems neuroscience to identify the causes of idiopathic voice disorders and to lead the way in developing new approaches for improved swallowing in patients at risk of aspiration pneumonia subsequent to neurological disease. Now we can modulate central neural control by applying motor augmentation and sensory stimulation using novel devices applied to the swallowing system post stroke.

MENTORING & WORK/LIFE BALANCE

Mentoring is a partnership with a senior scientist accepting responsibility for guiding a junior scientist on the path to success that meets their particular lifestyle. This cooperative venture usually lasts a decade until new investigators achieve tenure and have a flourishing laboratory of their own. Every relationship is different, but requires an honest exchange to find the best experiences and placements in academia or industry that suit a particular individual's scientific potential. For women scientists, the road to finding the best match to navigating a comfortable balance between family responsibilities and professional achievement can have a wide variety of solutions depending upon an individual's goals at each stage in his or her career. With more choices and greater flexibility, both male and female scientists can now negotiate arrangements to meet their professional and personal demands at each stage in their career. This is important to increasing the role of women in science.

Linda Porter, Ph.D.

Program Director, Systems and Cognitive Neuroscience Cluster, Division of Extramural Research

EDUCATION

Postdoctoral Fellowship: (Neurophysiology of Sensory-Motor Systems) Rockefeller University, 1987

Ph.D.: (Neuroanatomy) Boston University School of Medicine, 1985

B.Sc.: (Physical Therapy) McGill University, 1977

RESEARCH INTERESTS

I have directed an NIH-funded research program aimed at elucidating mechanisms of sensory-motor integration at the cortical level. I have also studied the effects of various neuromodulators on developing cortical neurons and their neuroprotective influence over neurons in the mature cortex. As a Program Director at NINDS, I am responsible for administrative and research issues related to peripheral and central mechanisms that mediate pain, central processing of pain

perception, disease-related pain disorders, and pain management. As the program director for the pain portfolio, I frequently interact with patient advocate groups, clinicians, and other parties interested in pain management and pain research.

PIVOTAL EVENTS

Joining the NIH as a program director in 2003 represented a significant and very exciting turn in my career path. The many years that I spent in academia before coming to NIH were focused on specific research questions. The laboratory work was interesting and the mentoring opportunities were extremely rewarding. As teaching and administrative duties became more encompassing however, the time for science became more elusive. The position at NIH brought me back full-time to science. My responsibilities at NINDS required management of a scientific portfolio in an area that was new to me. The unfamiliar territory of pain research presented a challenging task of acquiring scientific knowledge and becoming acquainted with the players in the research arena. It also created an incredible opportunity to observe the broad picture of an emerging wealth of clinical and basic science and to play a role in optimizing the direction of research. The portfolio in pain research is unique in that it spans the interests of nearly every Institute at NIH. This situation creates the need for Institute representatives to work cooperatively to share resources and develop multidisciplinary strategies to ensure that the NIH research portfolio on pain best serves the community. Dr. Zerhouni's directive to revitalize the NIH Pain Consortium in 2003 coincided with my joining NINDS and offered me the opportunity to coordinate the NINDS efforts to support pain research with those of the NIH community at large. It has been an exciting journey.

MENTORING & WORK/LIFE BALANCE

The most challenging aspect of my career was establishing and maintaining a balance between family life and professional responsibilities. My early years in a tenure-track position with its responsibilities of establishing a laboratory, obtaining NIH funding, and developing a set of lectures coincided with raising two infants. These were busy times that required personal sacrifices and careful arrangement of time, one commitment at a time. Maintaining personal time was important and for me, came in the form of commuting to work by bicycle. The balance was perturbed by the serious illness of one of my children, but with strong and enduring support from family and colleagues, a new equilibrium evolved. A year-long sabbatical in Switzerland, where the pace of daily life is temperate, and laboratory time is protected, helped in revisiting and prioritizing life's goals and values.

The rewards of an academic career are as varied and numerous as the challenges. Serving as a mentor to students and fellows at all stages of their careers was the most fulfilling aspect of my scientific career. The graduation of my first doctoral student remains a favorite memory.

Katherine W. Roche, Ph.D.

Chief, Receptor Biology Unit,
Division of Intramural Research

EDUCATION

Ph.D.: (Neuroscience) The Johns Hopkins University, 1995

B.S.: (Psychology) Duke University, 1987

RESEARCH INTERESTS

Glutamate receptor trafficking, regulation of excitatory synapses, synaptic plasticity, and learning and memory

PIVOTAL EVENTS

As an undergraduate, I was interested in biology and specifically in the brain. Although I enjoyed my courses, I was not particularly stimulated by the lab portions of my classes and did not consider a career in basic science appealing. However, the pivotal event in my early training was my opportunity to do my senior honors thesis research at the Environmental Protection Agency at Research Triangle Park, NC. I found it very exciting to design experiments and test my ideas in the laboratory. It had a lasting impact and played a role in me ultimately going to graduate school in neuroscience.

MENTORING & WORK/LIFE BALANCE

Pursuing a career in research is challenging, especially in addition to raising three children. However, having both a career and a family is extremely rewarding. To be successful, I have to carefully prioritize my goals and make the most of my time at work and at home. Therefore, I find it important to work efficiently whether conducting experiments, writing manuscripts, or preparing for seminars.

National Institute of Nursing Research

Patricia A. Grady, Ph.D., R.N.

Director

EDUCATION

Ph.D.: (Physiology)
University of Maryland
School of Medicine, 1977

M.S.: (Nursing)
University of Maryland
School of Nursing, 1968

B.S.: (Nursing)
Georgetown University
School of Nursing, 1967

RESEARCH INTERESTS

Stroke, hypertension, cerebrovascular permeability, vascular stress, and cerebral edema

PIVOTAL EVENTS

Science has always been of special interest to me. As I continued my education, I realized what an opportunity there was in nursing research, and how important this field is to our Nation's health care. That feeling has grown over the years, first as an independent researcher, then when I came to NIH as a Program Director and became the Deputy Director of the National Institute of Neurological Disorders and Stroke, and now as Director of the National Institute of Nursing Research (NINR).

It is my goal for NINR to advance nursing research and support investigators whose findings will directly benefit patients and their families. Research is the best way to create better patient care. For a nurse scientist, research ties you to something bigger and provides an evidence base for others to build upon. Research is as an investment in the future.

MENTORING & WORK/LIFE BALANCE

Mentoring is vital in nursing research. All that I have achieved in this field was made possible by the support and guidance I received from faculty at both Georgetown University and the University of Maryland. Working with more experienced investigators early in my research career, I observed how they balanced their personal responsibilities with their professional interests. We must always strive to maintain this balance, to develop both our own personal strengths and the strengths of our profession.

When respected scientists become mentors, they ensure that students and developing investigators have the training, resources, guidance, and motivation needed to become the scientists of tomorrow. In turn, these new researchers often serve as faculty, enabling more individuals to pursue their career goals and helping to eliminate the nursing shortage our Nation is experiencing.

INSIGHTS

Those who came before me in nursing research, and the new generation of nurse researchers whom I have seen develop over the past 10 years, have shown that there is no limit to what a woman can accomplish in this field. I have been fortunate enough to conduct critical research in fields that are clinically important. I have been honored with such awards as the Georgetown University School of Nursing's Centennial Achievement Medal, the National Institutes of Health MERIT Award, and the Public Health Service Superior Service Award, for my leadership. I have been elected to the American Stroke Association, the American Academy of Nursing, and the Institute of Medicine. However, as the Director of NINR, I have been most proud to guide our Institute in supporting successful researchers who will carry out our mission and further the health of all populations.

Mary E. Kerr, Ph.D., R.N.

Deputy Director, NINR

EDUCATION

Ph.D.: (Nursing) Frances Payne Bolton School of Nursing at Case Western Reserve University, 1991

M.N.Ed.: (Medical-Surgical Nursing) University of Pittsburgh, 1981

B.S.N.: Slippery Rock University, Slippery Rock, PA, 1977

RESEARCH INTERESTS

Cerebral perfusion and ischemia, traumatic brain injury, and subarachnoid hemorrhage

PIVOTAL EVENTS

Moving from the academic setting, where I spent the majority of my career, to the Deputy Director position at the National Institute of Nursing Research was a fascinating change. As a professor, I devoted my energy to teaching the next generation of clinical investigators. As a scientist, I focused on finding ways to improve cerebral perfusion of critically ill patients with a neurological injury or illness. My position at NINR has expanded my view in that I further appreciate the diversity and creativity behind research that is conducted across all conditions of health and illness and throughout the lifespan. NINR supports the research training and research projects that provide the evidence base for clinical practice. Seeing the benefit of research to the health of the public on a national scale has been personally rewarding and enlightening.

MENTORING & WORK/LIFE BALANCE

At the University of Pittsburgh, I held the positions of University of Pittsburgh Medical Center (UPMC) Health System Endowed Chair in Nursing Science, Director of the Center for Nursing Research, and Associate Director of the Clinical Core of the Brain Trauma Research Center. In these roles, I conducted clinical research, mentored junior investigators, sponsored research activities and advised, taught, and supervised the research of doctoral students and faculty. Over the years, I learned that success as a scientist involves producing good science as well as mentoring the next generation of scientists. This means one takes the time to develop young investigators through teaching, providing opportunities for them to take part in significant studies, and mentoring them in their new role. By helping young investigators ask important questions and acquire the skills necessary to conduct clinical research, science advances.

INSIGHTS

I am optimistic that I have helped to advance science in an important area of health care focused on cerebral ischemia in acute neurological conditions such as subarachnoid hemorrhage and traumatic brain injury. I was fortunate to be involved in an academic health center conducting research and teaching at the University of Pittsburgh. I hope that I have supported and mentored young scientists who will be at the forefront of future discoveries in clinical research. In my current role as Deputy Director at NINR, I now have the opportunity to contribute to this growth at a national level, and I am proud to be a part of it.

National Library of Medicine

Johanna McEntyre, Ph.D.
Staff Scientist and Chief, Public Services Section, Information Engineering Branch, National Center for Biotechnology Information

EDUCATION

Ph.D.: (Biological Sciences) Manchester Metropolitan University, Manchester, UK, 1993

B.Sc.: (Biological Sciences) Manchester Metropolitan University, Manchester, UK, 1987

RESEARCH INTERESTS

Bioinformatics, information retrieval

PIVOTAL EVENTS

After finishing my Ph.D., I decided that life as an experimentalist was not for me and moved into scientific publishing. In this position, I was lucky enough to be exposed broadly to the forefront of molecular biology research, and in particular I became fascinated by the emerging areas of bioinformatics and online publishing, which were made accessible to people like me through the Internet. It was amazing that I could take a gene sequence, run a BLAST search to find similar sequences, and then read PubMed abstracts describing the biology of the results, all from the comfort of my own desk. The idea that online bioinformatics resources could enable scientific discovery was powerful enough to me that when I got the opportunity to work at the National Center for Biotechnology Information, I jumped at the chance.

MENTORING & WORK/LIFE BALANCE

I think people choose their mentors, rather than their mentors choosing them. Having more women in leadership roles within bioinformatics will provide more opportunities for women to become mentors themselves. Two important qualities I gleaned from my mentors were to have confidence in my ideas and to instill in me the rigor to execute the better among them. I hope I have passed these qualities onto those I have mentored myself.

One of the nicer things about bioinformatics regarding the work-family balance is that a lot of the work is portable, which brings an element of flexibility that might not be possible in other positions.

Ilene Karsch Mizrachi, Ph.D.

Staff Scientist and Coordinator, GenBank and Chief, Primary Data Archives Section, Information Engineering Branch, National Center for Biotechnology Information

EDUCATION

Postdoctoral Fellowship: (Biochemistry), NCI, 1992–1995

Postdoctoral Fellowship: (Molecular Genetics) NICHD, 1991–1992

Ph.D.: (Microbiology and Immunology) Albert Einstein College of Medicine, 1991

M.S.: (Microbiology and Immunology) Albert Einstein College of Medicine, 1986

B.S.: (Biology, minor in Chemistry) State University of New York at Albany, 1984

RESEARCH INTERESTS

I am responsible for the coordination of the building and maintenance of the GenBank Nucleotide Sequence Database.

PIVOTAL EVENTS

I have always loved biology and computers, the technological advances made, and the challenges presented during the Genomics era. I had realized during my postdoctoral fellowship that bench science was not the proper career path for me. At that time, however, I did not know what else to do. I spent a few months working at a small biotech company and was extremely unhappy. I started to look for alternative career paths and found a position that seemed well-suited to me and my interests. In 1996, I accepted a position as a GenBank Indexer, where I processed incoming sequence submissions to the database. It was very exciting for me to be a part of this most important project. I was awed by this opportunity. I was able to continue to do what I loved without ever having to pick up a pipette again.

MENTORING & WORK/LIFE BALANCE

Balancing family and career can be challenging but extremely rewarding. The career path that I chose has enabled me to succeed at both. As a laboratory scientist, experimental demands often required me to spend evenings and weekends away from my family. As a scientist at National Center for Biotechnology Information (NCBI), where tasks do not have the same time constraints as working with living cells, I can devote quality time to my work during the work day, while having evenings and weekends to devote to my family. I have encouraged scientists with young families to choose a path such as mine to benefit from the flexibility offered by a "nontraditional" scientific career.

Teresa M. Przytycka, Ph.D.

Investigator, Computational Biology Branch, National Center for Biotechnology Information

EDUCATION

Postdoctoral Fellowship: (Biophysics) The Johns Hopkins University Medical Institutes, 1997–2000

Ph.D.: (Computer Science) University of British Columbia, 1990

M.S.: (Computer Science) Warsaw University, Poland, 1982

RESEARCH INTERESTS

Computational biology, systems biology, molecular evolution

PIVOTAL EVENTS

As a high school student, I had little doubt that my destiny was to become a mathematician. Indeed, my first research papers concerned theory of algorithms and graph theory. Well into my math-oriented career, I was invited to be a member of the Institute of Discrete Mathematics and Computer Science (DIMACS) during the special year on Parallel Computation. I was sitting in my DIMACS office, deep in thought, organizing some computations in a tree-like structure, when a guy stuck his head into the door: "What are you working on?" I replied briefly, "On trees." He asked, "Ever heard of evolutionary trees?" He clearly had no intention of leaving my office. I had heard of evolutionary trees, but it never crossed my mind that I would have anything to do with them. That day we had a long discussion and I made my first step from the comfort of well-defined math to the uncertainty of biology.

MENTORING & WORK/LIFE BALANCE

Our two boys were born when I was still a graduate student and considered myself invincible. For many years, it was difficult for my husband and me to find a position in one place and we managed to be together every second year at best. During this time, I got enormous help and support from my Ph.D. supervisor, postdoctoral mentors, family, and friends. Even when we eventually settled in one place, the organization of our home remained chaotic and, once again, our friends were there for us when we needed help. Both of us continued to be passionate about our research and, as the boys grew older, they started to appreciate and share this passion.

Recently, a graduate student I was supervising gave birth to a baby girl. I hope that I have given her the same encouragement and support I have been fortunate to receive.

Tatiana Tatusova, Ph.D.

Staff Scientist and Unit Chief, Reference Collection Section, Information Engineering Branch, National Center for Biotechnology Information

EDUCATION

Ph.D.: (Physics and Mathematics) Moscow State University, Moscow, Russia, 1988

M.P.S.: (Physics) Moscow State University, Moscow, Russia, 1982

RESEARCH INTERESTS

Bioinformatics, genomics

PIVOTAL EVENTS

I was very lucky to have great mentors in my professional career. My Ph.D. advisor, Dr. Liberman, always encouraged me in my research at graduate school. I had the great pleasure and honor to work with Drs. Ostell and Lipman at NCBI. They have inspired and supported me in all my scientific projects during the past 15 years at NIH.

MENTORING & WORK/LIFE BALANCE

Balancing family with professional responsibilities is not easy. A lot of times I felt guilty for not spending enough time with my kids because I had to devote my time to work, but I always tried to explain to my children what I did at work and why it was important. I believe that created a role model for their future. I have two sons who both graduated as biology majors and are now in medical school.

Deborah A. Zarin, M.D.

Senior Scientist and Director, ClinicalTrials.gov, Lister Hill National Center for Biomedical Communications

EDUCATION

Fellowship: (Child and Adolescent Psychiatry) Bradley Hospital, Brown University, 1985–1987

Residency: (Psychiatry) McLean Hospital, Belmont, MA, 1983–1985

Fellowship: (Clinical Decision Making) New England Medical Center, 1982–1983

Internship: (Pediatrics) Massachusetts General Hospital, 1981–1982

M.D.: Harvard Medical School, 1981

B.A.: (Human Biology) Stanford University, 1977

RESEARCH INTERESTS

Optimizing the use of data from clinical trials to inform medical and policy decisions

PIVOTAL EVENTS

I have been fortunate to develop long-term mentoring relationships with a number of people who have helped to nurture my interests in both clinical and policy issues. My interest in health policy began in college, and lasted through medical school and residency training. Eventually, I focused on the use of clinical trials to inform medical and policy decisions, both within my chosen specialty (psychiatry and child psychiatry) and within medicine as a whole. In addition to clinical work, my previous jobs included developing and implementing an evidence-based practice guideline development program for the American Psychiatric Association, and directing a program for the Agency for Healthcare Research and Quality (AHRQ) that involved conducting comprehensive evaluations of medical devices for possible coverage under Medicare. Based on these experiences, I understand the scientific and ethical importance of having a comprehensive and scientifically valid registry of clinical trials, and was thrilled to have the opportunity to help make that happen.

MENTORING & WORK/LIFE BALANCE

I have been inspired by several key mentors, each of whom has served as a role model for different aspects of my career. Balancing family and career has not been that difficult for me because it was always clear to me that once I had children, they came first. This was particularly important because I was a single mother of two daughters for most of their school years. The most important piece of advice I could give to any young parent would be to make sure that you take a job that has sufficient leave time to allow you to meet unexpected needs (e.g., sick days, school events) without causing stress, and also provides for sufficient family vacation times. In my mind, several weeks of work-free vacation (even if you stay home) is essential for everybody's mental health.

Center for Information Technology

Susan Chacko, Ph.D.

Computational Biologist, Scientific Computing Branch, Division of Computer System Services

EDUCATION

Postdoctoral Fellowship: (Protein Crystallography) NIDDK, NIH, 1992–1996

Ph.D.: (Biophysics) University of Illinois, 1991

M.S.: (Physics) Indian Institue of Technology, Kharagpur, India, 1985

B.S.: (Physics) Indian Institue of Technology, Kharagpur, India, 1983

RESEARCH INTERESTS

Our group, which consists of a mix of scientists and system administrators, runs scientific supercomputers for the NIH intramural community. As a scientist, I develop, maintain, modify, install, and investigate scientific software that is relevant to the NIH community, and consult with intramural scientists about projects that require supercomputing-scale resources.

PIVOTAL EVENTS

As a graduate student, I was drawn toward protein crystallography, a field that involved wetlab benchwork as well as computer programming. I was lucky enough to find a wonderful graduate advisor who encouraged his students to explore nonstandard scientific avenues. I really enjoyed my graduate work and was able to develop my computing and programming skills. During my postdoctoral career at NIH, I used the NIH computing resources extensively, and I was delighted when the opportunity arose to work in this group. After 10 years here, there's still a thrill about working at NIH, dealing with smart and interesting scientists, and of course the wonderful seminar series.

MENTORING & WORK/LIFE BALANCE

As the mother of two children, I have become an expert at functioning on insufficient sleep! It's a delicate balance at times, but I love what I do and it's all worth it.

INSIGHTS

There are many, many nontraditional niches in science that are exciting, intellectually satisfying, and that may fit your interests and personality better than the traditional academic path. I only wish I had time to explore them all!

CIT

Dale Graham, Ph.D.

Technical Manager NIH Intramural Database, Custom Applications Branch, Division of Enterprise and Custom Applications

EDUCATION

Postdoctoral Fellowship: (Molecular Biology) California Institute of Technology, 1970–1973

Ph.D.: (Molecular Biology) University of Tennessee-Oak Ridge Graduate School of Biomedical Sciences, 1970

B.S.: (Microbiology) University of Tennessee, 1966

RESEARCH INTERESTS

I previously studied molecular biology but now focus on computational biology and database programming.

PIVOTAL EVENTS

My Aha! moments came when I first observed bacteria under a microsope, the first time I isolated DNA from lamba bacteriophage, then understanding what we could do from a molecular biological approach (I sometimes even dreamed of annealing DNA strands). Also starting in graduate school, I had a strong fascination with harnessing computational tools to work for biological research.

MENTORING & WORK/LIFE BALANCE

I was fortunate to have excellent mentoring both in graduate school from Dr. Dorothy Skinner, my Ph.D. advisor, and others on the Oak Ridge faculty, and in my postdoctoral fellowship with Dr. Roy Britten. My parents were always positive about my abilities and extremely supportive of my wishes, even at the cost of suppressing their own opinions (I only found out later that my father had hoped I would go into medicine).

As much as possible, I have compartmentalized work and my personal life, ensuring that one did not subsume the other. I feel this has led to a richer life experience, as both work and personal experience support each other. I also think that some of my personal interests (ranging from dog obedience showing, rodeo photography, and breeding llamas) although not congruent with my research/work, have positively impacted it.

INSIGHTS

The major milestones of my career include the opportunity to be one of the first students in the Oak Ridge Graduate School with its intensive faculty/student ratio, a chance that led me to be able to meet with Dr. Roy Britten, my future postdoctoral mentor, and the opportunity afforded to me to come to the NIH by Dr. Gilbert Smith (NCI). At NIH, important moments were the offer to come into computing full-time under the aegis of Dr. Rodbard and Brian McLaughlin at the then Division of Computer Research and Technology (DCRT) (now CIT) and Mr. Russo's request that I undertake to the Office of Intramural Research's project to oversee data produced by the Intramural Research Program.

I feel that I have been very fortunate throughout my career, as I have not experienced some of the barriers that many women in research careers have faced. I have enjoyed new challenges and opportunities as they arose, allowing me to grow into new dimensions in my bench-science career (from zoology to microbiology to invertebrate molecular biology to developmental and evolutionary biology to mouse mammary gland virus research and then to insulin-like-growth factor I research). There was always an underlying theme of/interest in computational research, from graduate school onward, culminating with my move into full-time computational work. I have found that the successes (but frequent frustrations) of bench research better prepared me for the successes and frequent frustrations of computer programming.

Jean Mao, Ph.D.

Staff Scientist, Scientific Computing Branch, Division of Computer System Services

EDUCATION

Postdoctoral Fellowship: (Cancer research) Wistar Cancer Institute, 1998

Ph.D.: (Molecular Endocrinology) University of Delaware, 1997

M.S.: (Animal Reproduction) National University of Taiwan, 1994

B.S.: (Animal Science) National University of Taiwan, 1992

RESEARCH INTERESTS

Computational biology

PIVOTAL EVENTS

During my postdoctoral fellowship, I found that I was not happy working in the lab anymore due to the long, demanding hours without holidays, and low salary. I decided to take extra time after work to learn computer science. It turned out that there was demand for people with my skills to analyze biological data from high throughput computer analysis.

MENTORING & WORK/LIFE BALANCE

Being a full-time Federal employee and a mother of two daughters greatly increases my self-esteem and self-confidence, which is the key to my happiness and success. The professional learning and training process also greatly improves my productivity, efficiency, and effectiveness in my work. Alternating between the two roles not only enhances my time management ability, but also resets my mind to be more successful in both roles.

INSIGHTS

After getting a doctoral degree in molecular biology, I realized I didn't have enough time to be with my family due to the high demand of lab work. I decided to incorporate computer science into my biology knowledge and changed my career path to computational biology. Now, not only do I have a regular work schedule that allows me to enjoy enough time with my family, but also I feel very good about myself and am financially independent. I am glad I made the hard decision to change career paths. The main goal is to be happy!

Barbara Lynn Young, Ph.D.

Physical Scientist, Bioinformatics and Molecular Analysis Section, Computational Bioscience and Engineering Laboratory, Division of Computational Bioscience

EDUCATION

Ph.D.: (Physics) Purdue University, 1988

M.S.: (Physics) Purdue University, 1985

B.S.: (Physics) Centenary College of Louisiana, Shreveport, LA, 1982

RESEARCH INTERESTS

Bioinformatics and ontology engineering

PIVOTAL EVENTS

I have always been very excited about the advent of many biotechnologies. I remember two seminars, in particular, in which new technologies were presented, and the results simply took my breath away. One was about whole chromosome painting, and the other, about two-color microarrays. The potential for many of these technologies to be used in diagnosing disease inspired me to work on projects that may one day drastically reduce the time required for patients to receive a diagnosis for a serious disease.

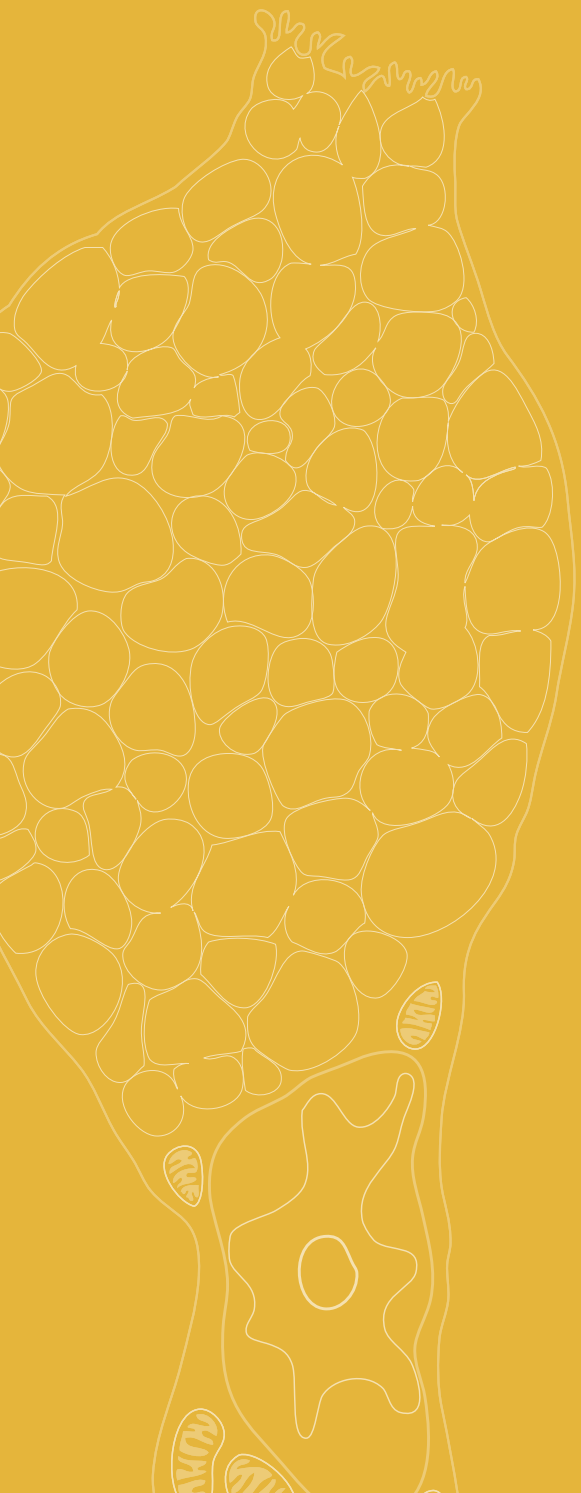
MENTORING & WORK/LIFE BALANCE

When I enjoy the projects on which I am working, I find a natural flow between personal and professional life. Unsolved problems can be placed in the back of the mind while away from the lab, and other parts of the mind can be exercised at that time. Often, when the well-rested mind views the problems anew, solutions present themselves.

INSIGHTS

What I appreciate most about being a scientist is the environment in which we work. We have an opportunity to make a contribution to improving human health. We interact with highly intelligent colleagues on a daily basis and are frequently exposed to ideas on the leading edge of research.

Center for Scientific Review



Cheryl Kitt, Ph.D.

Deputy Director

EDUCATION

Ph.D.: (Biopsychology)
University of Maryland,
College Park, 1981

B.A.: (Psychology)
Adelphi University,
Garden City, NY, 1974

RESEARCH INTERESTS

Comparative neuroanatomy, Parkinson's disease, neurotransmitters and Alzheimer's disease, pain research

PIVOTAL EVENTS

I grew up knowing I was an important member of a team. My father ran a service business dealing with auto glass and car locks, and my whole family helped him do the work and manage the business: my grandmother, mother, sisters, and brother. When I became a scientist, I gravitated to science that involved tremendous teams of collaborators with different areas of expertise, and I pursued basic research that held the promise of one day serving patients in great need, particularly Alzheimer's patients. I soon formed my own teams and found it very rewarding to mentor and train new scientists, many of whom went onto be very successful researchers and department chairs.

MENTORING & WORK/LIFE BALANCE

When I was a freshman in college, I had a professor who allowed me to work with complete freedom in her lab. It was exciting to work with grad students, and I published my first paper in my sophomore year. She was a wonderful professor. Even today, when I help others advance in their careers, I feel the same excitement that I felt as her student. Back then, people in science were men, but I didn't think of myself as a trail blazer. We were all just on the same team. Being a woman mattered more later in my career when I had two small children. I had become so busy I didn't see them enough. I eventually realized life was short and I needed to focus more on what was precious. I looked around for something different and I discovered NIH offered many great opportunities to create a new, more satisfying life.

INSIGHTS

In my second year as a postdoctoral student, I led research that identified the role of a neurotransmitter in the pathology of Alzheimer's disease. My results were published in *Science*. It was exciting to be developing techniques to solve a big medical mystery and to work with front-line physicians and the patients who stand the most to benefit from the research. Joining the extramural staff at NIH and later becoming the Deputy Director of the NIH Center for Scientific Review gave me many new opportunities to advance science and serve others. Despite large responsibilities, I have not forgotten what is important for the future. Other women can make discoveries and make a difference in people's lives. So I continue to do mentoring and outreach. I'm still thrilled when high school girls come up to me to find out how to have a career in science, too.

Suzanne Eileen Fisher, Ph.D.

Director, Division of Receipt and Referral

EDUCATION

Ph.D.: (Cell Biology) University of Illinois at Champaign-Urbana, 1978

B.S.: (Zoology) Michigan State University, 1972

RESEARCH INTERESTS

Gene duplication and regulation, developmental biology, evolution, cancer initiation and progression

PIVOTAL EVENTS

A major influence on my development as an extramural scientist administrator was the opportunity to work closely with two women who had dedicated so much of their careers to the peer review process—Dr. Catherine Henley in the National Eye Institute and Dr. Rosemary Morris in the Center for Scientific Review. Both were of the era when women felt they had to choose between a career and marriage/family and thus never married. Both were extraordinarily intelligent, great sources of knowledge about science and the extramural process, and had a fierce work ethic. Both were also enormously supportive of me in my efforts to establish a career and a family life. Though Catherine and Rosemary are now deceased, I regularly recall the lessons I learned from these two remarkable women.

MENTORING & WORK/LIFE BALANCE

My husband and I have been married for 35 years. We have one son; having one child was a conscious decision—we were concerned about our ability to juggle the many responsibilities as well as the financial considerations. We are enormously proud of him and realize that he has had to cope with the benefits and the burdens of his only-child and only-grandchild status. I always made a conscious effort to state that both his parents worked full-time. Most of our friends were in a similar situation and we learned so much from each other on how to cope at each stage—whether it was making your own baby food or driver's education. As I look forward to grandchildren, I will try to think of ways that I can help the next generation fulfill their career aspirations and enjoy a family.

INSIGHTS

Since leaving graduate school, my entire career has been at NIH as a postdoc and staff fellow in two intramural laboratories and then in the extramural process, first review and then referral. Though I have had only one employer, there has been great variety in what I have done and many changes over the years. In addition to my direct work responsibilities, I have had the opportunity to be involved in other interests, including libraries and history. NIH has allowed me to grow in knowledge and responsibility with many outstanding women scientists as role models and friends. I made the choice to come to NIH for a number of reasons, not the least to be in the same location as my spouse. It turned out to be a very fortuitous one.

CSR

Anita Miller Sostek, Ph.D.

Director, Division of Clinical and Population-Based Studies

EDUCATION

Ph.D.: (Developmental Psychology) State University of New York at Buffalo, 1975

B.A.: (English) New York University, 1967

RESEARCH INTERESTS

Developmental psychology, infant development, biobehavioral risk

PIVOTAL EVENTS

After obtaining a Ph.D. in developmental psychology and working within a medical setting on infant sleep, I came to the Department of Pediatrics, Division of Newborn Medicine at Georgetown University and conducted research on developmental outcomes of infants born at risk because of prematurity, complications of birth, or congenital neurodevelopmental disorders. Working within neonatology for 13 years, I was privileged to be mentored by male and female Chiefs who set the stage for a family-oriented workplace that provided support for the challenges of child and parent care. I have carried that experience with me to the NIH. My work with families gave me an appreciation for the complexity of challenges they face when dealing with disabilities and disadvantages, be they medical, developmental, financial, or social. I came to realize the unique place of various disciplines in defining and addressing these challenges.

MENTORING & WORK/LIFE BALANCE

I have mentored a large number of Scientific Review Officers, originally as a colleague, and then as Integrated Review Group Chief and Division Director. I also directed the CSR Review Internship program from 2001 until 2007. The program originally focused on intramural scientists, but then expanded nationwide to provide training in administration and increase the base of scientists eligible for Scientific Review Officer (SRO) positions. Before it ended, the program served 44 scientists including 28 women. In terms of staff members in general, I also feel that it is critical to relate to them on a personal level, focusing on families and health, particularly when they are experiencing difficult situations. Personally, I have two daughters whom I raised much of the time on my own while working in academia and at the NIH. Now in their twenties, they are doing well professionally, one as a journalist and one in information technology.

INSIGHTS

My milestones include reaching the rank of associate professor as a behavioral Ph.D. in a medical school, working in an area that had great meaning for me, and advancing our understanding of the developing brain by studying perturbations that occurred prenatally and shortly after birth. In addition, we used an early form of brain imaging to research the extent of intraventricular hemorrhage that is generally associated with prematurity. When I came to the NIH in 1987 to work in peer review, I was extremely fortunate to assume responsibility for a study section directly relevant to the topics I had studied. My children were in grade school at the time. While it is often difficult to balance priorities, it is as critical to do so as a woman in science as well as other professions. I like to think that a passion for what you are doing in the personal and professional spheres helps see you through.

Eileen W. Bradley, D.Sc.

Chief, Surgical Sciences, Biomedical Imaging and Bioengineering Integrated Review Group, Division of Clinical and Population-Based Studies

EDUCATION

D.Sc.: (Physiology/Radiobiology) Harvard University, 1971

M.S.: (Radiological Health) Harvard University, 1968

B.A.: (Biology) Anna Maria College, Paxton, MA, 1966

RESEARCH INTERESTS

Radiation effects on normal tissues; radiation oncology

PIVOTAL EVENTS

Pivotal events in my career include being awarded NIH predoctoral and postdoctoral fellowships as well as an R01 grant as a principal investigator. Other important aspects of my career have been excellent mentoring and the opportunities to work in a clinical research environment as well as at the NIH.

MENTORING & WORK/LIFE BALANCE

Mentoring is one of my favorite opportunities. In academia, I mentored doctoral students, postdocs, and residents. At NIH, I have the opportunity to mentor new Scientific Review Officers.

Family and professional responsibilities constitute a roller coaster ride. My three children are the most important part of my life. They have grown up to be intelligent, responsible, giving adults. There were times I felt like I was not doing a good job with either, but I'm very glad I did both.

Noni Husain Byrnes, Ph.D.

Chief, Cell Biology Integrated Review Group, Division of Biologic Basis of Disease

EDUCATION

Ph.D.: (Analytical Chemistry) Emory University, 1994

B.S.: (Chemistry) Allegheny College, 1989

RESEARCH INTERESTS

Analytical chemistry, fluorescence spectroscopy, chemical separations, technology development

PIVOTAL EVENTS

I can think of three events in different settings (graduate school, industry, government). In graduate school, my advisor allowed me to pursue a side project on my own as long as I agreed to do an oral presentation at a national meeting. In industry, I was supposed to help my manager with a project but realized very soon that he had stopped showing up for clinical project team meetings, forcing me to assume responsibility as our section's representative. In government, my supervisor delegated to me a presentation that he was asked to give to the advisory council. In each case, someone in a position of power chose to take a chance on me, a chance that they didn't have to take at a time when I was not sure if I was ready for it. Those opportunities had a critical impact on my self-confidence and success.

MENTORING & WORK/LIFE BALANCE

I have been blessed with wonderful mentors throughout my career so far. I administered CSR's Review Internship Program for 2 years and had the chance to work with many talented young scientists transitioning into extramural science administration. I have two young daughters and a husband with an academic appointment. We made a commitment early on to do everything possible to ensure that one of us is home after school. Each Sunday, we "work the home calendar" according to our work schedules the following week. I also made a commitment at work to never miss any deadlines or meetings due to my fluctuating schedule, and to always be accessible to my direct reports. Juggling the demands of work and family can become hectic at times, but it is worth it for the well-being of my children. Having a supportive spouse at home and a supportive supervisor at work is a tremendous plus.

Cathleen Cooper, Ph.D.

Scientific Review Officer, Transplantation Tolerance and Tumor Immunology Study Section, Immunology Integrated Review Group, Division of Biologic Basis of Disease; Referral Officer, Division of Receipt and Referral

EDUCATION

Ph.D.: (Pathology) University of Southern California, 1989

B.A.: (Bacteriology) University of California Los Angeles, 1976

RESEARCH INTERESTS

Microbiology, immunology, transplantation, transcriptional regulation of gene expression, cancer biology

PIVOTAL EVENTS

After college, I worked for a few years as a technician in a laboratory that pioneered immunohistochemical staining of tissue sections for identification and typing of poorly differentiated cancers. At first, I simply did the lab work and gave the slides to my boss, an M.D./Ph.D. pathologist, to read. After a while, I started reading the slides myself and writing up draft versions of the reports—just to see if I could do it—and submitted them to my boss along with the slides. In many cases, he only tweaked my report drafts a bit before sending them out, which gave me the confidence and the final push I needed to continue my studies—in pathology, of course!

MENTORING & WORK/LIFE BALANCE

I've had both strong and weak, even destructive, mentors at different points in my career. While the poor mentoring taught me good lessons about how to become self-sufficient and to believe in myself, it also taught me how much more any person can achieve when they have the right kind of support on their side.

It always has been very easy to lose myself in my work at the expense of my personal life, and this was one of the main reasons I left academia to take my current position at CSR as a Scientific Review Officer. However, 3 years after coming to CSR, I took on the additional responsibility of Referral Officer, then last year I was elected Chair of the CSR SRO Council, so achieving balance between my professional and person lives remains an ongoing struggle.

CSR

Cheryl M. Corsaro, Ph.D.

Scientific Review Officer, Genetics of Health and Disease Study Section, Genes, Genomes, and Genetics Integrated Review Group, Division of Molecular and Cellular Mechanisms

EDUCATION

Ph.D.: (Human Genetics) The Johns Hopkins University, 1975

B.S.: (Biology) St. Mary's College, Notre Dame, IN, 1969

RESEARCH INTERESTS

Human genetics, molecular genetics, genomics; ethical, legal, social implications of human genetics

PIVOTAL EVENTS

I was fortunate to have an inspiring genetics professor in college who motivated me to change my major from math to biology and to go to graduate school in genetics. I joined the Ph.D. Program in Human Genetics at Johns Hopkins University, which was an excellent experience, largely due to faculty who were very supportive of graduate students. After working as a postdoctoral fellow for a number of years, I decided to make the switch from experimental research to science administration. Again, I was fortunate to find an outstanding training venue, the Grants Associates Program at the NIH. This was a 1-year management internship program for research scientists who were changing to science administration. It was an excellent way to learn about the NIH Extramural Program and to make many contacts throughout the NIH. I continue to draw upon these experiences and connections over 20 years later.

MENTORING & WORK/LIFE BALANCE

I have been lucky to have had supportive mentors at several stages of my career—during college, graduate school, posdoctoral training, the NIH Grants Associates Program, and as an employee in the NIH Extramural Program. These mentors played a very strong role in the development of my career and were critical to its development. The challenge of balancing family with professional responsibilities is a constant work in progress. I have found that during intense periods of work that required long hours, it was important to always take Saturday off to refresh. It also helps to remind myself that I am a person first and a scientist second.

Sherry L. Dupere, Ph.D.

Chief, Biology of Development and Aging Integrated Review Group, Division of Molecular and Cellular Mechanisms

EDUCATION

Ph.D.: (Microbiology & Immunology) Ohio State University, 1980

M.S.: (Biology) University of Cincinnati, 1974

B.S.: (Biology) University of Cincinnati, 1970

RESEARCH INTERESTS

Developmental biology; biology of aging (molecular to whole organism-based studies of biological changes over time); stem cells and regenerative medicine; global health; bioethics

PIVOTAL EVENTS

I am fortunate to have seen my early passion for nature develop into a scientific career broad enough to weather the vicissitudes of funding and employment for many years. Undergraduate training in biology led me to plan graduate studies in tropical disease microbiology, but the untimely death of my advisor obliged me to redirect my master's thesis research to a different laboratory studying microbial hydrocarbon degradation. Another pivotal event was redirecting my training to again include more human health relevance through doctorate-level research in cellular and molecular studies of cancer and aging. Postdoctoral and independent research followed in this vein with emphasis on chromatin neoantigens, growth factors, and proto- and onco-genesis in cancer and embryonic development. This led ultimately to a position in NIH Extramural Research Administration. In retrospect, I would offer this advice to any new scientist: "Be persistent, be resourceful, and embrace change as an opportunity for growth."

MENTORING & WORK/LIFE BALANCE

"Mentoring" is a term I rarely heard before coming to NIH, although it certainly has served me throughout my career. My undergraduate advisor, a woman scientist and excellent role model, taught me that "gender is incidental to capability." Typically, subsequent mentors have provided both positive and negative influences, but mostly positive. In recent years, I became a "mentor" myself to two talented CSR interns, both of whom have since been hired in NIH Extramural Research Administration. As Integrated Review Group (IRG) Chief, I occasionally advise staff about career options, and always strive to foster their professional growth.

Balancing family and professional responsibilities may have been easier for me, for I am unmarried and have no children. However, I have long nurtured a love of travel and support for wildlife preservation, and with continued good health I hope to travel more extensively and continue extracurricular efforts toward the protection of endangered species.

Joy Corey Gibson, D.Sc.

Chief, Cardiovascular Sciences Integrated Review Group and Hematology Integrated Review Group, Division of Physiology and Pathology

EDUCATION

D.Sc.: (Nutrition) Harvard University School of Public Health, 1974

M.Sc.: (Nutrition) Harvard University School of Public Health, 1972

A.B.: (Physiology) Mount Holyoke College, 1970

RESEARCH INTERESTS

Lipid and lipoprotein metabolism, atherosclerosis and cardiovascular disease in general

PIVOTAL EVENTS

My success as a scientist has largely been due to being in the right place at the right time and taking advantage of the circumstance. After my postdoctoral fellowship at Cornell University, I married a corporate tax lawyer and spent the next 30 years of my life moving from one position to another, adapting my career to geographical moves that were integral to his career track. As luck would have it, each place we settled, from Sydney, Australia; to New York City; Coral Gables, Florida; Summit, New Jersey; and Washington, DC, proved to be an opportunity for me and provided me with a foundation that facilitated each subsequent career move. I took advantage of each position, gaining experience and approaching each as if it were a permanent commitment. As a result, I was able to gain experience and publications and develop long-term friendships and professional relationships, all of which have served me well throughout my career.

MENTORING & WORK/LIFE BALANCE

It has been very rewarding to have brought up two children while maintaining an unbroken professional career. I spent 3–4 years in each of three different academic institutions childless, but when I joined the pharmaceutical industry and remained at one job for 14 years, child raising became an important adjunct to my professional life. Raising children kept my life in perspective and, with the help of my colleagues and at-home child care, I never felt that I was sacrificing either responsibility. Both of my children are now focused on professional careers and it has never occurred to my daughter to view marriage and a family as an alternative to a career. I would counsel any young woman contemplating combining a career and a family that the two are complementary and can enrich and renew one's perspective on life.

Sooja K. Kim, Ph.D.

Chief, Endocrinology, Metabolism, Nutrition, and Reproductive Sciences Integrated Review Group, Division of Biologic Basis of Disease

EDUCATION

Ph.D.: (Nutritional Science and Biochemistry) Texas Woman's University, Denton, TX, 1975

B.S.: (Human Ecology) Humboldt State University, Arcata, CA, 1967

RESEARCH INTERESTS

My main areas of interest are nutrition and metabolism. In addition, as Chief of the Endocrinology, Metabolism, Nutrition, and Reproductive Sciences (EMNR) IRG and SRO, I am continually reviewing and keeping abreast of the most recent cutting-edge scientific areas in endocrinology, metabolism, nutrition, and reproductive sciences, including the burgeoning research area of diabetes and obesity.

PIVOTAL EVENTS

Many mentors have helped my personal and career development. One in particular was Dr. Doris Williams, who tirelessly helped junior faculty to grasp the "nuts and bolts" of academic work and rapidly gain understanding of institutional procedures and cultural expectations at a middle-size university in Ohio. Dr. Calvin Long at Medical College of Ohio focused on my real research work while he encouraged me to question and be persistent to overcome any consequential obstacles to achieve only the best outcomes of the research. Both mentors challenged me in cross race/gender aspects despite the institutional culture of inhibiting attention to Asian-American females.

MENTORING & WORK/LIFE BALANCE

I have been involved with the following activities: 1) As a member of Research Subcommittee and Seminar Series Committee under the Office of Research on Women's Health (ORWH), I help identify and recommend priority areas of research for women's health; 2) As a member of the Advisory Committee to the organization, Korean-American Women in Science and Engineering (KWISE), I have been advising activities for the members, including networking opportunities,

community service projects, job opportunities, and internal communication network (KWISE Web page, newsletters, e-mails, etc.). In addition, I have been co-chairing "Women in Science and Engineering Forum" during the United States-Korea Conference on Science, Technology, and Entrepreneurship to address "Facing Challenges" and "Navigating Professional Career Advancement" for the past 2 years; and 3) I am frequently asked by women scientists to talk about grantsmanship and NIH peer review information.

For professional women, staying fit is essential for balancing family with professional responsibilities. I try to maintain good health practices with regular physical activity.

Christine Melchior, Ph.D.

Chief, Integrative, Functional, and Cognitive Neuroscience Integrated Review Group, Division of Physiology and Pathology

EDUCATION

Ph.D.: (Psychobiology) Purdue University, 1977

M.S.: (Psychology) University of Bridgeport, 1973

B.S.: (Psychology) Duke University, 1971

RESEARCH INTERESTS

Neuroscience, biomedical basis of alcoholism

PIVOTAL EVENTS

Maintaining a joy in discovery and figuring out how things work has certainly been a critical factor for me in starting and continuing a career in science, but doors have opened to different directions in science from networking and building on experiences. I have enjoyed serving my scientific community by actively participating in relevant scientific societies and sitting on various study sections to review grants. As a Chair of a VA grant review panel, I enjoyed helping put together the puzzle of matching grants to the expertise of the panel members, so I was very interested when a colleague at NIH called and asked if I would apply for a position as a Scientific Review Administrator. Working in this capacity proved rewarding and led to other career advancements.

MENTORING & WORK/LIFE BALANCE

Given the many hours spent at work, I consider the people with whom I work to be my alternate family, so I have enjoyed providing guidance to my students and staff members. I have benefited directly from formal mentoring situations, but another important source of guidance for me has been observing others and thinking about how they handle different situations.

Anna L. Riley, Ph.D.

Scientific Review Officer, Psychosocial Development, Risk, and Prevention Study Section; Risk, Prevention, and Health Behavior Neuroscience Integrated Review Group, Division of Clinical and Population-Based Studies

EDUCATION

Postdoctoral Fellowship: (Gerontology) University of Michigan, 2003

Ph.D.: (Sociology/Social Psychology) Washington State University, 1994

M.A.: (Sociology) Southern University, Baton Rouge, LA, 1986

B.A.: (Sociology) Paine College, Augusta, GA, 1984

RESEARCH INTERESTS

Social and personality psychology, aging and health, risk and prevention, and health disparities

PIVOTAL EVENTS

The pivotal event in my scientific career is the 3 years I served as a National Institute on Aging postdoctoral fellow at the University of Michigan's Institute for Social Research. This experience determined the focus of my scientific career on the interaction of social and personality psychology with physical and mental health across the lifespan. During this period, I participated in key components of the research process, including grant-writing, which helped prepare me to administer the grant review process as a Scientific Review Officer. I also taught the methodology of studying aging populations and trained interviewers for the National Survey of American Life—a national longitudinal study assessing the prevalence of mental disorders in Blacks/African Americans. Overall, these experiences determined the focus of my professional life and demonstrated the critical role that Federal postdoctoral opportunities can play in training scientists for public service.

MENTORING & WORK/LIFE BALANCE

I have received exceptional mentoring. I began my career at NIH in the internship program at CSR. Thus, I have been provided with great guidance and support from colleagues. Balancing family and professional life is always a challenge. My husband and I work hard to balance our careers, our church activities, and our family responsibilities. We do this by focusing on the importance of giving our best in each environment and by trying to nurture others as they work to achieve their goals.

Fogarty International Center

Karen Joanne Hofman, M.D.

Director, Division of International Science Policy, Planning, and Evaluation

EDUCATION

Postdoctoral Fellowship: (Pediatric Disabilities) Johns Hopkins Hospital, 1988

Postdoctoral Fellowship: (Pediatric Genetics) Johns Hopkins Hospital, 1985

M.B.BCh: University of Witswatersrand, Johannesburg, South Africa, 1978

RESEARCH INTERESTS

Global public health with a focus on sub-Saharan Africa, biomedical ethics, human resources for global health research, implementation and dissemination science, childhood disabilities

PIVOTAL EVENTS

Fifteen years after moving to the United States, my family and I spent a sabbatical in Cape Town. This experience proved to be a pivotal event in my career. My mentor, the first female Dean at a medical school in South Africa, asked me to collaborate with one of her faculty. While working on local provincial guidelines to screen for childhood disabilities, I realized that my research skills could be used in the policy arena. I also began to perceive myself as a member of the African science diaspora. On returning to the United States, I decided to change my focus to global public health, a field where I thought I could have a greater impact. This shift presented some challenges, but after a couple of years at the headquarters of the Pan American Health Organization in Washington, DC, the prospect arose to transition into science administration and science policy for global health at NIH.

MENTORING & WORK/LIFE BALANCE

Balancing work and family life has presented many challenges that have changed over time: first in my capacity as one partner in a two-career couple and also in my role as mother of two young adult sons. Several factors have been crucial to managing this balance. One is an encouraging spouse who was willing to share responsibilities. The second is a succession of flexible and supportive mentors. For several years when my children were young, the Chair of Pediatrics at Johns Hopkins graciously agreed to my request for a 4-day week. This allowed me some flexibility. While I don't think it compromised my productivity, it did increase my efficiency!

I am passionate about mentoring—this began at Johns Hopkins with medical students, pediatric house staff, and genetics fellows and continued at NIH where I have mentored several interns and staff to pursue global health and related careers.

INSIGHTS

For the past 10 years, I have been on staff of the Fogarty International Center. My office is responsible for helping to set the agenda and determining research gaps and training needs in global health. We help to guide the NIH response with respect to international research strategy and evaluate ongoing Fogarty programs. On reflecting on my career trajectory, I received strong encouragement at my girls-only public high school in Johannesburg to pursue science and medicine as a career. My entry to the University of Witwatersrand School of Medicine took place during the Apartheid-era in the 1970s in South Africa. While my class of 200 students, most of whom entered directly out of high school, was 40 percent female, the racial diversity was minimal and did not reflect the population. Also notable was the separation of medical students by race; amongst us were a few Black students whose rotations were confined to Black-only facilities. This early experience of working in a racially divided and socioeconomically inequitable healthcare delivery system left a lasting impression on me. It has been the key motivating force for my work in global health. My exposure to health research began as a medical student and continued during my internship and residency. In particular, the Clinical Pediatric Research Unit at The Chris Hani Baragwanath Hospital in Soweto provided me a unique opportunity to learn research skills as a budding pediatrician. In the early 1980s, a time when the repressive apartheid regime seemed firmly entrenched, I left South Africe for the United States. During my postdoctoral years, my career evolved in the direction of childhood disabilities and genetics. Most importantly, these two closely related disciplines provided a view of research though a lens of public health. During my tenure on the faculty at Johns Hopkins, I established the first Down Syndrome clinic and was exposed to and participated in a broad spectrum of research from the laboratory to the bedside. Daily exposure to an NIH-funded pediatric clinical research unit was critical. Over time, I became increasingly attracted to research on ethical, legal, and social issues that impact on health policy and medical education. With a growing family and after 12 years of a daily commute from Baltimore to Washington for my husband, we decided to move to the DC area. Soon after this, our family spent a sabbatical in Cape Town, South Africa. Working at NIH has afforded me a great opportunity to develop an understanding of one of the preeminent research funding agencies in the world. I believe that health science is inherently an international enterprise. For this reason, I am fortunate to serve on the staff of the Fogarty Center, where the mission meshes so seamlessly with my own goal of promoting the developing country research expertise to enhance global health.

Marya Levintova, Ph.D.

International Health Program Officer, Division of International Relations

EDUCATION

Ph.D.: (Clinical Psychology) California School of Professional Psychology/ Alliant University, 2000

M.A.: (Clinical Psychology) California School of Professional Psychology/ Alliant University, 1997

B.A.: (Psychology) University of Redlands, 1995

RESEARCH INTERESTS

Noncommunicable disease prevention and control, health policy and legislation implementation and monitoring, social and behavioral interventions

PIVOTAL EVENTS

As a former Olympic swimmer, being diligent in achieving my goals has been in my blood since early childhood. As a young adult deciding on a career, the only difficulty was determining what exact career goal I was trying to reach. As I am in the early stages of my career, I cannot definitely state that the path I have chosen thus far will be the path I will stay on for the rest of my career. Nonetheless, I believe that the most important event in my life that led me to strive toward success was immigration to the United States from the former Soviet Union at the age of 16, when I had to suddenly prove that I was a somebody.

MENTORING & WORK/LIFE BALANCE

I believe that mentoring is a very important component of one's success, but in reality, good mentors are incredibly difficult to find.

I believe there are some positive changes for women who are trying to balance family and work responsibilities. I have found that an understanding relationship with the director is essential, as it aids in determining the level of latitude one may have to complete their professional responsibilities, while at the same time being able to tend to the needs of their family.

INSIGHTS

I feel that I have been fairly fortunate in my career progression. Partly, I believe it is because of my life experiences. In addition, the people I studied with have been instrumental in my career progression and decisions. I would not say that reaching the various career milestones thus far has been easy; quite the opposite, it has been a rocky road and at times, it did not feel

that I moving forward. Ultimately, I believe that success comes from inside the individual, but because it is so fragile, it needs the support of mentors who need to provide the fertile ground for one's growth.

Linda Elaine Kupfer, Ph.D.

Deputy Director, Division of International Science Policy, Planning, and Evaluation

EDUCATION

Ph.D.: (Pharmacology)
Columbia University, 1984

A.B.: (Psychology)
Cornell University, 1978

RESEARCH INTERESTS

International science policy, evaluation, pharmacology, biotechnology

PIVOTAL EVENTS

My enthusiasm for science has been a constant in my career. Upon receiving my Ph.D. from Columbia University, I was awarded an AAAS Fellowship in Scientific Diplomacy. This opportunity afforded me a position at the State Department where I coordinated and negotiated bilateral science and technology agreements with China, Japan, and countries in Southeast Asia. While the process of getting my Ph.D. in pharmacology confirmed my interest in science, my experience at the State Department introduced me to the field of science policy, particularly the international aspects and I really loved it!

My next few jobs were in international science policy at National Oceanic and Atmospheric Administration (NOAA). While there, an opportunity opened for me to use my pharmacology background and I became a program officer for marine biotechnology in the National Sea Grant College Program Office. Because of congressional interests, my colleagues and I developed an evaluation framework for scientific programs at Sea Grant, allowing me to get back to science policy. I brought the evaluation framework to the policy and evaluation office at the Fogarty International Center, NIH, where I now work.

I couldn't have planned or predicted any of the many opportunities I've had in my career, but it's been a really interesting and productive journey with science at the center.

MENTORING & WORK/LIFE BALANCE

I worked full-time for 3 years at the Department of State until I had my son. When he was born, I took 3 months off and then requested to come back to the State Department part-time. This was in 1987, and there were not many (or perhaps any) part-time positions at the Department of State. I therefore resigned from State and decided to take 2 years off and be a full-time mom. I joined a PACE (Parent After Childhood Education) groups and my son and I had many fun bonding hours together and with other mothers and their children.

I loved being a full-time mom, but it was very hard! I was ready to go back to work part-time when my son was 2 years old. Coincidentally, a colleague I had worked with while at State offered me a job, 2 days a week, 10 minutes from my house. I took the job and was still able to take my son to mommy and me programs but was back in the adult science working world, which was a lot of fun. It was a great arrangement. As my son spent more hours in organized programs, I increased the time I gave to work. When he went to school full-time, I began working 4 days a week and continued with that schedule until 5 years ago when I came to the NIH. This is my first full-time job! Working 4 days a week was the best. I found I was able to go on class trips, do errands, and other work to free up weekends to spend with the family. For me, part-time work was worth the sacrifice in pay and promotion given the benefits to my quality of life with my family.

Cécile G. Viboud, Ph.D.

Staff Scientist/Epidemiologist, Division of International Epidemiology and Population Studies

EDUCATION

Ph.D.: (Epidemiology and Public Health) University of Paris, France, School of Public Health, 2003

M.P.H.: (Biomathematics)
University of Paris, France, School of Public Health, 1999

Engineering Degree:
(Biological Sciences)
National Institutes for Applied Sciences, Lyon, France, 1998

M.S.: (Mathematics)
University Claude Bernard, Lyon, France, 1997

B.S.: (Mathematics and Biology)
University of Lyon, France, 1997 and 1998

RESEARCH INTERESTS

Mathematical and statistical modeling of infectious diseases, spatial and temporal patterns, influenza epidemics and pandemics, respiratory and enteric viruses

FIC

EVENTS

As a young graduate student at the University of Paris, France, I was fortunate to work in a research division where a lot was going on, and where I could try very diverse projects. I was able to work on studies across the board of statistics, modeling, clinical epidemiology, and chronic and infectious diseases. This made me realize that I was passionate about infectious diseases, influenza in particular, for which population dynamics are still poorly understood. I have been working on influenza research ever since starting my graduate work, and continued in this line of research after my move to Fogarty, NIH, in 2003. While at Fogarty, I had the opportunity to work with many people from different horizons and nationalities, and analyze epidemiologic data from many different countries. Acquiring a global perspective of influenza epidemiology patterns was essential to my success as a scientist, while at the same time, it was a truly enriching experience to work in international health.

MENTORING & WORK/LIFE BALANCE

As an NIH scientist, I believe that my specific research area is important for the advancement of public health and science in general; however, the most important part of my work is mentoring. Over the past few years, I have mentored junior scientists and less junior foreign scientists, and found it most rewarding, perhaps because mentoring is a more tangible and less abstract product than a scientific communication. Most importantly, I had outstanding mentors as a graduate and postdoc student, interestingly each with very different skills, and this was key in teaching me how to mentor people.

Family life does not always seem compatible with a demanding career as a scientist, and it seems that there is never enough time for work and family. However, I strongly believe that having a rich family life can make me a better scientist, and vice versa.

National Center for Complementary and Alternative Medicine

Josephine P. Briggs, M.D.
Director

EDUCATION

Research Fellowship: (Physiology) Yale School of Medicine, 1976–1979

Fellow: (Clinical Nephrology) Mount Sinai School of Medicine, 1973–1975

Residency: (Internal Medicine and Nephrology) Mount Sinai School of Medicine, 1970–1973

M.D.: Harvard Medical School, 1970

A.B.: (Biology) Harvard-Radcliffe College, 1966

RESEARCH INTERESTS

My main research interests are diabetic kidney disease, the renin-angiotensin system, circadian regulation of blood pressure, and effect of antioxidants in kidney disease. In addition, I am interested in the mind-body connection, the use of complementary and alternative medicine (CAM) for symptom management, and the application of new research methods and techniques that focus on biocomplexity to CAM research.

PIVOTAL EVENTS

At Harvard I investigated different majors, but biology drew me—my father was a scientist, I enjoyed science, but the balance was tipped by wonderful biology professors, such as Dr. Matthew Meselson. Another difficult decision was whether to pursue a medical degree versus a Ph.D. in science; my final decision to go into medicine was guided by a desire to interact with people. Once in medical school, I considered pediatrics, but chose nephrology because of excellent mentors, such as Dr. Peter Coggins at Massachusetts General, and my appreciation for nephrology's quantitative nature. Following my residency, I pursued research training, a decision that led to my meeting my husband and then basic research in Germany. My moves to the University of Michigan and then to NIH/NIDDK brought together my clinical and research experience. While at NIDDK, I met Dr. Stephen Straus, who led NCCAM, and together we worked on the Science of the Placebo conference in 2000, which introduced me to NCCAM.

MENTORING & WORK/LIFE BALANCE

Throughout my career, professors and mentors have played a key role in my decisionmaking. In return, I have mentored/trained many young scientists who are now spread across the country doing wonderful research. I have also worked to recruit talented people to NIH and build strong research groups. I am proud of relationships I have built and consider it an important part of my career. I also recognize that one cannot underestimate the value of a supportive spouse or partner in making decisions about work and family while maintaining a research career. I was fortunate to have had my children while I was working in basic research, which, in some ways, offered more flexibility, and while at the University of Michigan I benefited from the proximity of home to work, which aided the ability to balance work and family life.

INSIGHTS

I was extraordinarily lucky in my career to have had the opportunity to not only work with patients, but also train in research and have that duality of experience. In fact, I now advise young scientists who want to have this duality to pursue the M.D./Ph.D., route, which really was less common when I was training in medicine and research. Having this mix of basic and clinical experience enabled me to take the unique career path that I have had—moving back and forth between the clinic and the laboratory. This experience was really my foundation for my understanding of translational research, which I see as the essential approach to the future of medical research—creating teams of researchers that draw upon the expertise of clinicians in the field and researchers at the bench.

As a woman in research, I have sometimes felt outside of the establishment. In 1970, when I graduated from medical school, it was a different era for women in science. There were only 12 women, I think, in my graduating class, so there was not a large network of other women scientists. Now there is a much larger network of women researchers. We need to embrace the opportunities that that network provides for support and collaboration. Here at NIH, for example, I have had the advantage of being connected with many women in research and other fields.

Laura Lee Johnson, Ph.D.

Statistician, Office of Clinical and Regulatory Affairs

EDUCATION

Ph.D.: (Biostatistics)
University of Washington, 2002

M.S.: (Biostatistics)
University of Washington, 2000

B.A.: (Mathematics)
University of Virginia, 1997

RESEARCH INTERESTS

Methodology for semi-parametric joint modeling of longitudinal and survival data (e.g., looking at the quality of life at the end of life), biomarker and person-reported outcome data, dosing studies, and studies with multiple interventions and outcomes

PIVOTAL EVENTS

I would not have known my field existed except for the offhand remarks of several people. My high school chemistry teacher told me, if I wanted to be a math teacher (I liked math, so it made sense) I should major in math, not education. My dad later said if I was good in math, why stop at a B.A.? Why not get a Ph.D.? My undergraduate statistics professor convinced me to work part-time as a data manager for a clinical trial. Later, the Principal Investigator of that study, a nurse, told me my work was vital to changing how care was being delivered to the underserved population we were studying. I suddenly realized that my math background was good for something beyond simply teaching calculus; I could help people in other ways. I resubmitted Ph.D. applications for biostatistics. I was hooked.

MENTORING & WORK/LIFE BALANCE

For a woman, in particular, the outside pressure to have children is sizeable. It is important to decide what you want and occasionally revisit that with your family and yourself. I have many mentors in government, research organizations, academic positions, young and old; talking to them when trying to decide next steps has been extremely helpful. Most told me tenure-track and having children did not mix. Their advice was, "Do something else, make your name there, have your family, then go into academics." I have seen some people try to do everything exceedingly well all at once and pull it off. But very few people. Regardless of your path, caring for older relatives, even handling a household of two adults, can be rough. I can have everything I want, but not be all at once. I like my job, but I do realize I have to sleep at night.

INSIGHTS

Milestones for me are not the awards, fellowships, or positions, but the thank yous and the fortuitous events. In the introductory biostatistics class that I teach, I tell my students to learn basic algebra, and not just to pass the course. Too many people are afraid of math, and this skill is tremendously empowering. Several former students (all adults, most with doctoral degrees) have written to thank me for that advice. NIH grantees I work with thank me and my office for helping their projects succeed. The fact that busy investigators take that time, reminds me that the hard lines we take matter and are useful. When middle school students I talk to understand how to look at information critically and they thank me for advising them (they did all the work!), I swoon. My work helps others achieve their milestones.

Two short fortuitous events boosted my career. As a graduate student, I was speaking at an international conference immediately prior to a star in the field. When the session fell 20 minutes behind schedule, the majority of the attendees—most of whom had come to hear the forthcoming "star"—also heard my presentation, while trying to figure out who I was. When the star attraction gave her talk, she made reference to my presentation. (Speaking of thank-yous: Thank you, Diane; thank you, Paula, for rehearsing me; thank you, Donald and Carol, for the added support.) I still work with people I met through that talk.

When I first came to NCI, my mentor noticed I had a teaching award and asked me to take over some lectures for him in a small course. That "small course" is televised to 14–17 domestic and international sites each year! My branch full of nonstatisticians and my mentor listened to each lecture, gave comments, and proofed my final exam. All the practice and input paid off when my teaching reviews came back. (Thank you, Paul, Craig, and CPSB.)

My coworkers have been wonderful teachers about science and life in every place I have worked. (Thank you, UVa, UW, VAPSHCS HSR&D, and NCCAM.) I never thought I would marry, but I found a partner who helps me be a good scientist. That coupling is not an accomplishment itself, but staying together is, and his unwavering support has helped me push forward when exhausted. He might be my biggest cheerleader.

And speaking of cheerleading…cheerleading is important. Taking the time to help people out by promoting their work when you believe in it or to volunteer in schools so students know your job exists can be done by anyone at any point in their education and career. The accomplishment from helping others will magnify and multiply your career achievements.

Barbara Sorkin, Ph.D.

Extramural Scientist Administrator, Division of Extramural Research

EDUCATION

Ph.D.: (Developmental Molecular Biology) The Rockefeller University, 1985

M.S.: (Molecular Biophysics and Biochemistry) Yale University, 1978

B.S.: (Molecular Biophysics and Biochemistry) Yale University, 1978

RESEARCH INTERESTS

Cell biology, developmental biology, cell-cell adhesion and regulation of cell/tissue differentiation and cell proliferation, cancer biology, neurobiology, biology and neurobiology of aging, complementary/alternative and traditional medical approaches

PIVOTAL EVENTS

Mentors throughout my life have encouraged me toward science: from my father, a violinist with a deep love of science, to high school and college teachers who encouraged me to learn about scientific research, whether by pointing me toward Columbia University's wonderful Science Honors Program for high school students or by inviting me to do research in their labs.

During my first year of graduate school, my research taught me not to rely on dogma. I was analyzing the carbohydrate portion of a chicken cell adhesion protein and kept finding that the ratios between amounts of different sugars were inconsistent with any known vertebrate proteins. I learned that unusual results require unusually clean data from several different experimental approaches, but that with good data, even the newest grad student can change dogma and, most importantly, that the fact that an observation hasn't been reported before doesn't mean it's wrong.

MENTORING & WORK/LIFE BALANCE

Having chosen early on not to have children, I find it critical to interact whenever possible with young scientists and science students; the interaction not only recharges my own enthusiasm and keeps me up to date, but also allows me to try to pass along the mentoring I was fortunate to receive, as I'm sure my mentors would have wished me to do.

Recently, as my parents have aged, I've had to learn the high-efficiency art of combining professional life with more demanding family responsibilities.

INSIGHTS

Sometime during my graduate school career, my (male) mentor, in the course of a "whither your research career" conversation, told me that as a woman in a largely male profession I would always need to prove myself to a greater extent than the men to achieve the same level of success. Fortunately for me, he was unbiased enough to understand that was an issue I would face once I moved beyond his sphere of influence. Unfortunately, while I think the situation has improved over the decades since then, the data say that the playing field still isn't level.

Most women have stories about male colleagues who clearly thought we'd gotten our academic or other positions as token women (or worse), rather than through having proved ourselves worthy of our appointments. My favorite of those experiences was with one such colleague who, one day in the lab, apparently unable to find a male to consult with, asked me what I made of his puzzling, hot-off-the-press data. I looked at it, had that flash of insight, turned his film upside down, and said "I think it's exactly what you expected." He never treated me like a dumb brunette again. I hope he generalized the lesson to other women!

Julia T. Arnold, Ph.D.

Staff Scientist and Lead Investigator, Endocrine Section, Laboratory of Clinical Investigation, Division of Intramural Research

EDUCATION

Postdoctoral Fellowship: (Experimental Therapeutics) The Johns Hopkins University School of Medicine, 1999–2001

Postdoctoral Fellowship: (Cancer and Cell Biology) National Cancer Institute, 1998–1999

Ph.D.: (Experimental Pathology) School of Medicine, University of North Carolina, Chapel Hill, 1998

B. S.: (Human Biology and Population Dynamics) University of Wisconsin, Green Bay, 1976

RESEARCH INTERESTS

Our research investigates the complex interaction of endocrine-immune-paracrine factors involved in the regulation of prostate epithelial function by associated normal or reactive stroma and extracellular matrix, and consequently how that functioning is altered in neoplasia. The prevalent over-the-counter use of DHEA, an adrenal steroid, is a current research target as it may contribute to progression of prostate lesions by being preferentially metabolized to androgens in the presence of inflammatory cytokines contributed by the reactive stroma. We additionally focus on mechanisms of botanical-based supplements that may modulate the interactions of DHEA-treated prostate stromal and epithelial cells.

PIVOTAL EVENTS

My science career developed somewhat backward. My undergraduate studies were in ecology and environmental science, but I never had the opportunity to be exposed to basic research. After working for 10 years in a contract research laboratory, gaining experience in carcinogenesis and eventually directing the lab, I realized the limit of opportunity for scientists without a Ph.D. So I went back to graduate school in my late 30s. Even though I was the oldest graduate student in my class, I wanted to work toward doing something I was really excited about. I now look forward to many challenging years of coordinating investigations toward teasing apart cellular complexities. My background in ecology provided a perspective toward developing a paradigm of research in complementary and alternative medicine that adopts an integrative approach to restoring an ecological balance in the physiology for better health.

MENTORING & WORK/LIFE BALANCE

The energy and creativity of the next-generation scientists whom I mentor is very exciting. We are here to encourage and promote our students as scientific knowledge unfolds at an exponential pace. We will never understand it ALL. As we piece together our separate investigations, we gather increased appreciation of the complexity of the human physiology and disease processes. I find it is important to not let scientific arrogance take over one's character. Arrogance can be a cover for ignorance. It is perfectly fine to say, "I do not know the answer to that question, but let's go look it up!" Balance between home, family, and work can be very difficult, but worth it. There is no perfect time to start a family as a women scientist. You just do it. Ask for advice and find support from fellow women scientists. And most importantly, take care of yourself.

Dale Lousie Birkle, Ph.D.

Scientific Review Officer, Office of Scientific Review, Division of Extramural Activities

EDUCATION

Postdoctoral Fellowship: (Ophthalmology) Louisiana State University Medical Center, 1982–1986

Ph.D.: (Pharmacology) Virginia Commonwealth University, Medical College of Virginia, 1982

B.A.: (General Sciences) Bridgewater College, Bridgewater, Virginia, 1977

RESEARCH INTERESTS

Complementary and alternative medicine, mind-body medicine, neuroscience, interaction of stress responses and psychiatric conditions, effects of adverse early life experiences on brain development

PIVOTAL EVENTS

A pivotal event in my career development occurred some time during graduate school when I realized that the most important quality of a scientist was the ability to stick with it, perseverance. Learning that a lot of the daily experience of a working scientist is negative (experiments that don't work, papers that get rejected, grants that go unfunded), but that one discovery, or seeing the light go on in the eyes of one student, makes up for all of that.

I think the most valuable skill I have as a scientist is knowing how to write, a skill that was fostered by a love of reading, an early infatuation with journalism, creative writing classes, and keeping a journal.

MENTORING & WORK/LIFE BALANCE

Mentoring at its best is very personal, but formal mentoring programs have their place, too. Just being visible as a successful female scientist is mentoring in the sense of providing role models. A mentor has to be a very giving person; many people are not up to the task.

Balancing work and family requires organization, many lists and reminders, a family that is willing to help out, and no hesitation about asking for help.

Sheila Ann Caldwell, Ph.D.

Program Officer, Office of Special Populations, Division of Extramural Research

EDUCATION

Ph.D.: (Molecular and Cellular Oncology) George Washington University, 2001

M.Phil.: (Molecular and Cellular Oncology) George Washington University, 2000

(Biology Concentration) Northeastern University, 1992–1994

B.A.: (International Relations with a concentration in Economics) Boston University, 1989

RESEARCH INTERESTS

Women's health, health disparities, and minority training programs

PIVOTAL EVENTS

No singular pivotal event in my background has directly influenced my success as a scientist. Rather, the major influences in my success have been the "messages" I received throughout my childhood.

I was told by my parents that there was nothing I could not accomplish through dedication and hard work. My parents believed that determination (sometimes referred to as stubbornness), perseverance, and passion were key elements in building character. They told me to always do what I believed to be right, to treat people with respect and to help others—especially those who cannot help themselves.

After taking a slight detour into a more political pathway, and with encouragement from several science professors, I pursued a career in science. I applied to graduate school and received my master's and Ph.D. from George Washington University in molecular and cellular oncology. My thesis research was on neuroblastomas and medulloblastomas, two pediatric cancers. The word pediatrics and its cognates mean "healer of children." Pursuing research in pediatrics was my way of helping a subset of people who were reliant on others and could not generally help themselves.

After doing a postdoctoral training fellowship at NCI, I welcomed the opportunity to explore a career outside of bench science. Up until this point, I had been surrounded by male role models. The lack of women in senior scientific positions was discouraging. This is why coming to NCCAM's extramural

program has been such an illuminating and worthwhile experience. I have been extremely fortunate to be exposed to very astute, knowledgeable, and wise NCCAM mentors, namely Drs. Margaret Chesney and Ruth Kirschstein. These women have truly encouraged my learning and growth. I have felt truly supported as a women scientist at NCCAM, where a clear message has resonated that women can be strong, taken seriously, and hold positions of leadership in science. This support has encouraged me to pursue my career goals in extramural, namely working in the areas of women's health, health disparities, and minority training.

MENTORING & WORK/LIFE BALANCE

Work and family are both central to my way of life. Finding a balance between the two is an issue of importance to many women, men, and employers and can be a great source of stress. My experience with successfully balancing work and family life has never been more apparent than during my time at NCCAM.

A healthy family and a successful career in science are two very important goals but can often compete with each other. Dr. Margaret Chesney, NCCAM Deputy Director, has been extremely supportive in understanding the responsibilities of raising a family while forging a successful career in extramural science. She has allowed changes in work schedule, such as teleworking to allow some flexibility to work from home, when necessary. Dr. Ruth Kirschstein, NCCAM Acting Director, has been a significant mentor by inspiring and supporting me in both the areas of family and work. Being a wonderful role model herself, Dr. Kirschstein understands the delicate balancing act and is a strong proponent for women in science.

I firmly believe that the scientific community must foster more understanding and support of women in science and their desire to have both a family and a career. This philosophy is strongly supported and embraced at NCCAM. There are many examples of professional women at NCCAM who do this balancing act successfully every day. As I pursue my career and achievements in science, my hope is that I can serve as an inspiration and mentor to upcoming women in science.

Laurie Friedman Donze, Ph.D.

Scientific Review Officer, Office of Scientific Review, Division of Extramural Activities

EDUCATION

Ph.D.: (Psychology) Michigan State University, 1996

Predoctoral Research Fellowship: (Psychology) State University of New York at Buffalo, 1995–1996

Predoctoral Internship: (Psychology), Veterans Affairs Health Care System, Palo Alto, CA, 1994–1995

M.A.: (Psychology) Michigan State University, 1991

B.A.: (Psychology) University of California, Berkeley, 1986

RESEARCH INTERESTS

Obesity and eating disorders (etiology, treatment, and prevention); prevention and treatment of type 2 diabetes, cardiovascular disease, cancer, and substance abuse; neurobiology of eating behavior; diet and physical activity behavior change; community-based interventions and alternative treatments for obesity; mind-body treatments of physical and psychological conditions

PIVOTAL EVENTS

The pivotal events that have probably most contributed to my success as a scientist are the many professional rejections I experienced (and my response to them), starting with not being admitted to graduate school the year following college. I applied again the next year and was then accepted to Michigan State's graduate program in clinical psychology. While still on my internship, I applied to countless postdoctoral research positions across the country, including a position at the Johns Hopkins Weight Management Center. I was not offered that position, but instead I took a research fellowship in pediatric obesity at the University at Buffalo. After two (challenging) years in Buffalo, I was finally offered a faculty position at Johns Hopkins with their Weight Management Center! I often wished that I could have just skipped those 2 years in Buffalo, but actually, they were a necessary part of my personal and professional development.

MENTORING & WORK/LIFE BALANCE

People often marvel at how I balance working full-time with being the mother of two young children and wife to a busy husband. For me, my desire to have a family has always gone hand-in-hand with my desire for a career. As a child, I wanted a career so I could "support my family." While in graduate school, I did not think much about starting a family until after

I defended my dissertation. The very day after my defense, my desire to have a baby kicked in! I got married 4 years later, and 5 years after earning my Ph.D., my son was born! The combination of my work, my children, and my relationship fulfills and energizes me in a way that allows me to manage it all... For example, my 6-year-old son wants to be a scientist and often asks if I ever wanted to be a "real" scientist!!

Jeanette M. Hosseini, Ph.D.

Scientific Review Officer, Office of Scientific Review, Division of Extramural Activities

EDUCATION

Ph.D.: (Physiology) Uniformed Services University of the Health Sciences, 1996

B.S.: (Medical Technology) Wright State University, 1973

RESEARCH INTERESTS

General physiology/clinical medicine, nutrition/mineral metabolism, bone, laboratory science, clinical trial design

PIVOTAL EVENTS

My technical research position in the NIH Clinical Center Clinical Pathology Department groomed me for a growing research interest in magnesium, nutrition, and general physiology, so much so that I decided to pursue a Ph.D. degree in physiology in the fall of 1990 at USUHS. Through this endeavor, I came to appreciate the role of Federal funding activities and the impact this can make upon science. Therefore, from that point forward, I have found much personal reward in my capacity as a scientific review official at the NIH, both at NCCAM and at the National Eye Institute.

MENTORING & WORK/LIFE BALANCE

Balancing home and professional responsibilities was most challenging while I was pursuing my Ph.D. full-time and simultaneously working part-time at the NIH Clinical Center Clinical Pathology Department (CC CPD) in a research position. Additionally, I was trying to maintain infrastructure for my nuclear family (my husband, myself, and my daughter in middle school). My success was critically dependent upon weekend work hours at the CC CPD, my husband's willingness to take on additional tasks, and my daughter's ability to become more independent and self-sufficient. I feel very fortunate that all things came together in a positive way to provide the necessary support. I feel I have served as a role model for my daughter and I look forward to mentoring her further as she finishes up her M.D./Ph.D. this May and starts a family of her own, most likely while completing her residency program.

Martina Schmidt, Ph.D.

Scientific Review Officer, Office of Scientific Review, Division of Extramural Activities

EDUCATION

Internship: (Scientific Review Administration) Oncology IRG, CSR,NIH, 2004–2005

Research Fellowship: (Cellular Oncology) NCI, NIH, 2001–2004

Postdoctoral Fellowship: (Cellular Oncology) NCI, NIH, 1997–2001

Ph.D.: (Microbiology) University of Würzburg, Germany, 1997

M.S.: (Biology) University of Würzburg, Germany, 1993

B.S.: (Biology) University of Würzburg, Germany, 1990

RESEARCH INTERESTS

Oncology, virology, immunology

PIVOTAL EVENTS

Working as a bench scientist often required unconventional working hours and working environments. Leaving the laboratory in the evening did not mean that I stopped thinking about a research project. Often, I found a solution to a project while doing the laundry or washing the dishes. As science and research always seemed to linger somewhere in the back of my mind, early on I realized that it was important that if I started a new project or a new position, I would have to be certain that this was really what I was interested in, that this was really what I want to spend my time with. Keeping this in mind always seemed to help me get over obstacles and keep a positive attitude, even in situations that seemed difficult at the time.

MENTORING & WORK/LIFE BALANCE

Mentoring is a great experience independently of who you mentor or at what level you mentor. It is immensely gratifying to see your knowledge being used, often being modified and applied to new scenarios. Additionally, I always thought that the feedback and the questions I received and the discussions I had were equally beneficial for myself and for the person I was mentoring.

I always found that a very honest and realistic assessment of my professional responsibilities as well as the needs of my family were essential to balance both responsibilities. Being well informed about the demands of a job was always helpful in deciding if a certain position was right for me (and my family). Some flexibility in my job and just being well-organized certainly

helped. Being prepared for unexpected circumstances, always having a fall-back plan in the back of my head, and always working ahead of deadlines if possible seem to be essential.

Marni N. Silverman, Ph.D.

NCCAM Director's Postdoctoral Fellow (Former); Postdoctoral Fellow, Section on Neuroendocrine Immunology and Behavior, Integrative Neural Immune Program, Division of Intramural Research Programs, National Institute of Mental Health

EDUCATION

Ph.D.: (Neuroscience)
Emory University, 2005

B.S.: (Psychobiology)
Binghamton University
(SUNY), 1995

RESEARCH INTERESTS

I am interested in studying how dysfunction of neuroendocrine stress pathways (HPA axis) and the immune system contribute to the high comorbidity between depression and other chronic diseases, such as cardiovascular, metabolic, infectious and autoimmune disease. I am also interested in measuring neuroimmune biomarkers in various clinical populations practicing a mind-body intervention to help elucidate the underlying biological mechanisms of how CAM modalities potentially affect a multitude of health outcomes (psychological and physical well-being). Finally, I am interested in the role of glucocorticoid resistance in susceptibility to inflammatory disorders. Individual differences in glucocorticoid sensitivity may also shed light on reasons for individual variability in responsiveness to CAM therapies that modulate the perception of and the neuroendocrine response to stress.

PIVOTAL EVENTS

My interest in science started at a young age, with my Dad being a high school science teacher in chemistry and physics, mentoring me on award-winning science fair projects, and encouraging me to tag along on class trips. As my science education continued, my interests became focused in biology, especially in the biology of behavior and the factors that make us the unique individuals we are.

I believe that "health care" involves treating a person as a whole and not just a sum of their symptoms, whereby one's mental well-being is crucially intertwined with their physical well-being. Therefore, I am excited to have been awarded the NCCAM Director's Fellowship, which has given me the opportunity to apply our knowledge of the biological mechanisms underlying stress-related disorders toward the understanding of mind-body intervention efficacy in alleviating "dis-ease."

Throughout my training, I have been privileged to receive excellent mentorship in which my ability to grow as an individual has been nourished. My Ph.D. advisor warned me early on that pursuing a research career is like a marriage: it requires relentless dedication and can sometimes be an emotional roller-coaster. I believe that my enthusiasm, perseverance, and attention to detail have helped guide me on the right track for a successful scientific career.

MENTORING & WORK/LIFE BALANCE

I have not yet had the opportunity to mentor a long-term student at NIH. However, being part of a multidisciplinary lab, composed of fellows with expertise in the fields of immunology, molecular biology, psychiatry, and myself in neuroscience, we all mentor each other, contributing to the interdisciplinary nature of our field of study, psychoneuroimmunology. As a graduate student, I had the honor to mentor an undergraduate student over the course of a year on his honors research project. This was an invaluable and rewarding experience as I was able to communicate my knowledge and skills and watch my student grow personally and professionally. He went onto pursue an M.D./Ph.D. As for balancing my personal and professional life, it can be challenging at times. I am lucky to have parents who support me in all my efforts and a fiancée who understands the time I need to devote to my career. It is important to remember that it is love that makes the world go around. Surround yourself with friends, family, and what you love to do and your happiness will spread to those around you.

Marguerite Alice Klein

Health Science Administrator/Program Officer, Division of Extramural Research (Former); Health Science Administrator, Office of Dietary Supplements, Office of Disease Prevention, Office of the Director, NIH

EDUCATION

Graduate Courses: (Health Education and Statistics, Statistics, Epidemiology, Clinical Trials, and Technical Writing, Horticulture and Natural History) University of Maryland College Park, Foundation for Advanced Education in the Sciences, Inc. (FAES), Bethesda, MD, USDA Graduate School, Washington, DC, 1990–1997

M.S.: (Nutrition) Tufts University, 1984

B.S.: (Nutrition) University of Rhode Island, 1981

RESEARCH INTERESTS

Efficacy and effectiveness of diet and dietary supplements in preventing and treating chronic illnesses, especially conditions influenced by behavior and environment

PIVOTAL EVENTS

My mother's old china cabinet: To house my natural objects collections, thereby, beginning in elementary school my systematic scientific inquiry, development of observational and analytic skills, and providing a base for future study.

National Cholesterol Education Program (NCEP): To manage components of NHLBI's newly launched NCEP. My first professional experience in developing something from nothing taught me the thrill of the challenge, in addition to communication skills for a variety of professional and lay audiences and how much research is needed to affect practice guidelines. I wanted to do research.

Pathways, a study of obesity prevention in Native American children: To conceptualize, develop, and implement a multicenter, school-based clinical trial. This experience exposed me to the nonscientific elements of clinical studies, especially "standardized" behavioral interventions in multicultural populations.

Product Quality Working Group: To conceptualize, develop, and implement NCCAM's policy and guidance to investigators on the quality of biologically active agents and placebos used in CAM research.

MENTORING & WORK/LIFE BALANCE

My mentoring occurs on and off the job. I speak to students, interns, and other academic groups as part of my NIH job experiences, but I prefer to spend my personal time with children. I am passionate about mentoring young people, for instance, helping out with scout badges and science fair projects to foster their interest in the health and environmental sciences. Strongly influenced in the 1960s and 1970s by the burgeoning environmental movement, I chose to not have children. Hence, my family responsibilities are fewer, but I substituted environmental and conservation activities, which have ultimately benefited my professional interests. Because I play hard and work hard, I chose to compartmentalize my activities so that I could focus and do each activity well. It turns out that my personal activities in the natural sciences have not been mutually exclusive and benefit my understanding of botanicals and their application to health.

Recently, as my parents have aged, I've had to learn the high-efficiency art of combining professional life with more demanding family responsibilities.

National Center on Minority Health and Health Disparities

Joyce A. Hunter, Ph.D.

Deputy Director

EDUCATION

Ph.D.: (Physiology–Cardiovascular) Howard University, 1998

B.A.: (Biology) Dillard University, New Orleans, LA, 1978

RESEARCH INTERESTS

Hypertension and cardiac function, extramural policies and procedures (specifically those regulating human subjects' involvement in clinical studies), and minority health and health disparities

PIVOTAL EVENTS

I grew up in a still-segregated south, which remained steadfast in its determination to withstand the inevitable downfall of years of racism with the arrival of the Civil Rights Era. My family drilled into my siblings and me the importance of education with the same fervor and conviction that we were taught about religion and civil rights. My early leanings were toward a career in civil rights and government, but there was always a pull toward science and the unknown. I did well in both, but must admit science took a bit more effort. I think the pivotal moment for me was the day I learned from Dr. Pendleton (the family doc) that high blood pressure was not an illness that you were supposed to have, that there were causes, causes that changed the normal way that the body worked. Yet everyone in my family seemed to have this mysterious high blood pressure. I had to learn more, so a major in biology was the only logical choice.

I was fortunate enough to attend one of the Historically Black Colleges and Universities (HBCU) with a racially mixed faculty that not only encouraged students to succeed, but expected it, and did not shy away from rimming your ears if they thought you were not doing your best. My introduction to research and the area of science for which I still feel quite passionate was through Dr. Joyce Verrett. Dr. Verrett was a mammalian physiologist, faculty mentor in the Porter Foundation Mammalian Physiological Consortium, and an NIH Minority Biomedical Support grantee (now known as MBRS). While working with Dr. Verrett, I was afforded the opportunity to gain research training at the Marine Biological Laboratory (Woods Hole, MA) and the Argonne National Laboratory (IL). For me, physiology

explained the normal functioning of organ systems and provided a "logical thought process" for when the normal functioning became pathological. I was hooked!

During my junior year of undergrad, Dr. Verrett took several of us to a symposium where Dr. Edward W. Hawthorne (cardiologist and hypertension researcher) was the keynote speaker. This was the first time that I had ever heard anyone speak with such intensity; an intensity that stirred excitement about the heart and about biological research as the key to solving the puzzles of hypertension. I knew what I had to do. I wanted to become a cardiovascular physiologist. It was logical. I began my graduate career under Dr. Hawthorne as a trainee on an NRSA Minority Institutional Research Training Grant.

One could easily say that I am a product of outstanding mentors, HBCUs, the American Physiological Society Porter Foundation, and NIH Training Opportunities.

MENTORING & WORK/LIFE BALANCE

Throughout my life and career, there have been individuals who have provided guidance, support, and encouragement to me. I came to the NIH extramural community quite early in my career. Quite frankly, had I known of all the fantastic research training and career development opportunities supported by the NIH and available to academic researchers, I probably would have remained in research longer. Nevertheless, I have had several positions in the extramural community in both program and review areas. I have learned much, received many awards and recognitions, and have had many wonderful mentors and colleagues along the way. NIH provided me with an inexhaustible array of opportunities to develop a professional career, and serve the larger extramural community. I have tried to share with students and young investigators how to use the research training and career development opportunities that NIH supports to explore and developed their own research careers. My current position is perhaps the icing on the cake in that I get to work with some of the brightest and best in an effort to eliminate health disparities, which includes hypertension.

INSIGHTS

If you look at every experience in life, whether good or bad, as an opportunity to learn, you will. The more you learn, the more you have to share. In fact, it is a responsibility, it's logical.

Ileana Collado Herrell, Ph.D.

Director, Division of Scientific Strategic Planning and Policy Analysis

EDUCATION

Ph.D.: (Human Development)
Institute of Child Study,
University of Maryland, 1976

M.A.: (Psychology)
University of Puerto Rico, 1971

B.A.: (Psychology)
University of Puerto Rico, 1965

RESEARCH INTERESTS

Global health, drug abuse and prevention, women's health, impact of health literacy and language proficiency in research and healthcare access, behavioral determinants of population health

PIVOTAL EVENTS

Being a research scientist and a Hispanic woman affords me a unique perspective on the insidious problem to which I have devoted my professional life, eliminating health disparities rampant in communities of color around the world. A native of Puerto Rico, I have seen the toll exacted by the disproportionately high incidence of disease, burden of illness, and mortality experienced by my fellow Puerto Ricans. Being a trained behavioral scientist enables me to help develop the interventions likely to be most successful.

During my career, I have become a recognized expert on developing health promotion and disease prevention policies and programs at the local, State, national, and international levels. I have served as a consultant to governments and nongovernmental agencies in more than 24 countries, and to the United Nations system, including the International Labour Office (ILO) and the World Health Organization in Geneva, Switzerland. While on detail to the WHO, I was executive secretary to the Global Task Force on Health Policy and Development and advisor to the Global Commission on Women's Health.

MENTORING & WORK/LIFE BALANCE

I try to lead through example. As one of the first minority female SES member of the HHS, I have mentored many women, particularly women of color, who often struggle to establish their careers as public health professionals and scientists. Balancing career and family has been as rewarding as it has been challenging. There are similarities in my approach to my professional and family life that helped me to provide guidance and direction to my children. I believe that my work ethic sets an example for my children as to the importance of values and of contributing to the community. Despite being raised in a majority environment, my children were able to maintain their cultural heritage, and both are multilingual. They were taught early on that setting goals and priorities and learning how to resolve conflict are all important skills in one's personal and professional life. The end result is that I have been blessed with two strong and independent children, who have achieved many successes and whom I feel are well-prepared to manage their professional and family lives.

National Center for Research Resources

Barbara M. Alving, M.D.

Director

EDUCATION

Residency and Fellowship: (Hematology)
Johns Hopkins Hospital, 1973–1976

M.D.: Georgetown University School of Medicine, 1972

B.Sc.: (Biology)
Purdue University, 1967

RESEARCH INTERESTS

Inherited and acquired disorders of bleeding and clotting as well as new agents for treating thrombotic disorders

PIVOTAL EVENTS

In 1976, I joined the Public Health Service, working at the U.S. Food and Drug Administration on the NIH campus on studies of fibrinogen, while simultaneously becoming involved in applied research concerning blood products. The ability both to conduct research and take part in programs having national impact led to a 28-year career in the government, spanning three Federal organizations: the FDA, the Walter Reed Army Institute of Research, and the NIH. Each one has provided me with outstanding challenges and opportunities.

My most recent challenge has been to develop, in the capacity as director of the National Center for Research Resources, the Clinical and Translational Science Awards. These awards, which will be established at 60 academic health centers by 2012, aim to transform how clinical and translational research is conducted, ultimately enabling researchers to provide new treatments more expeditiously to patients.

MENTORING & WORK/LIFE BALANCE

Throughout my career, I have had numerous mentors. My initial 4 years at the FDA were greatly enriched by Dr. John Finlayson, a biochemist who was both an outstanding teacher and collaborator in the research that I undertook. He not only promoted my professional efforts, but he also set extremely high standards for scientific publication. During each phase of my career, I have had the good fortune of working with individuals who succeeded in the environments in which they were placed and served as outstanding role models.

My husband, Carl, a research physician, has been my most constant mentor and for this I am extremely fortunate. The balance of work and life, including parenting, has always been a challenge and will continue to be so. There are times when the family comes first and times when work must be a priority. I have no easy answers. I try not to spend valuable time doing tasks that can be effectively done by others and to concentrate on those tasks that specifically need my qualified attention. Consequently, some time is freed up for enjoyment of life, which in turn, increases my productivity.

INSIGHTS

My professional experiences have taught me to be willing to take risks in terms of new positions, new areas of research, new committees, and other new challenges. I have learned how important it is to be willing to explore the world around me, while maintaining a sense of humor, and that one does not have to be perfect to succeed. We all need to take time to enjoy friends and family; after all, they form the foundation of our lives.

Louise E. Ramm, Ph.D.

Deputy Director

EDUCATION

Ph.D.: (Microbiology) University of Virginia, 1974

M.S.: (Microbiology) University of Virginia, 1971

B.S.: (Biology) Marquette University, 1967

RESEARCH INTERESTS

Development of nonmammalian/mammalian models for biomedical research, membrane protein expression and function

PIVOTAL EVENTS

Twenty years ago, I had the opportunity to join the NIH. I was in an unusual situation as a brand new administrator, since I was given almost carte blanche in developing a new program based on a National Academy of Sciences report entitled, "Models for Biomedical Research: A New Perspective." This was a challenge since my scientific expertise was in immunochemistry and microbiology. However, the experience of starting this program, initially focusing on marine/aquatic models for biomedical research, with an NIH consensus conference, an ad hoc marine models assessment conference, and several other meetings targeted at a scientific community that I hardly knew was exciting and tested me professionally in a very different way. I became quite knowledgeable about this broad area of science and very engaged with the scientists. I feel that I was able to play a pivotal role in enhancing the support for nonmammalian/freshwater species as research models as well as resources to the biomedical community. This position at the NIH clearly had a seminal effect on my success as a different type of scientist: one from the extramural administrator community.

MENTORING & WORK/LIFE BALANCE

I was very unfortunate as a graduate student and a postdoctoral fellow not to have good mentors. I relied heavily on the advice of other students and postdocs for problem solving and various issues, which did not lend itself to great insight! So, as my own career progressed, I made an active effort to formally and informally mentor others, and I have relished the time that I have spent with both new and seasoned extramural administrators, particularly women. Also, I have sought out individuals to mentor me and have been rewarded, albeit later than I wished, with superb mentors.

One of my biggest challenges has been to maintain an even disposition at work and at home with traveling a 100-mile roundtrip every day. Despite this hardship, balancing my work and family has been reasonably straightforward for me since I have my husband, Eric, who has championed my efforts both as a research administrator and a nationally ranked age group triathlete.

INSIGHTS

Once you have defined yourself by the job you do, you run the risk of being very unhappy when your work changes dramatically, such as through a change from being an active research scientist to an administrator or through retirement. I have witnessed unsettled and even depressed individuals who could not cope with this type of sea change. It is important to use these situations as yet another challenge.

I believe that women, in general, are too hard on themselves. I have forced myself to step back and understand that life is too short, that many of the perceived problems and disappointments will pass, and that in the large scheme of things most adversities are fleeting moments that are really not that important. In fact, I think that one's emotional style sets a tone for the workplace. A good leader who creates a positive atmosphere through her own emotional well-being and actions serves her employees well and creates an environment where everyone is valued.

Sheryl Kay Brining, Ph.D.

Director, Office of Review,
Office of Extramural Activities

EDUCATION

Ph.D.: (Neuroanatomy) University of Cincinnati, 1991

M.A.: (Biopsychology) University of Chicago, 1982

B.A.: (Psychology) Reed College, Portland, OR, 1976

RESEARCH INTERESTS

Neuroscience: basic research in Alzheimer's disease, neuroanatomy, animal models of behavior, chemical senses; electron microscopy

PIVOTAL EVENTS

Two prior generations of women in my family modeled how to attain a satisfying, professional life. I am here because they came first and not just because of our biological connections, but because of what they achieved in their lifetimes without an advanced education or terminal degrees. I wanted to go on and do even more because of them.

My studies on ethology and animal behavior led me to study the brain and eventually to basic research on Alzheimer's disease. My career has spanned various research areas, which has served me well in my present position. In this science administration position, I oversee an office that is responsible for the review of any type of science imaginable and the infrastructure to support it.

MENTORING & WORK/LIFE BALANCE

Mentoring is a way of life and you need more than one person. My many mentors have had different strengths. They are people whose strengths are different from mine. I try to keep in mind that every person I meet has something to teach me. Sometimes the lessons taught were not the ones I may have wanted and may not have been from the folks I chose, but in always getting up and trying again, I have found that the experiences have served me well and, most importantly, have allowed me to "pay back" by helping others along the way. The best advice is to keep an open mind and learn the lessons when they are presented or the teacher finds a way of coming back until you do!

Work/Life Balance: have a partner who believes in you and is willing to pitch in with the cooking!

Elaine Smith Collier, M.D.

Assistant Director for Clinical Research,
Division for Clinical Research Resources

EDUCATION

Fellowship: (Endocrinology) University of Utah College of Medicine, 1978–1980

Internship: (Internal Medicine) University of Utah College of Medicine, 1975–1978

M.D.: University of Alabama in Birmingham, 1975

M.S.: (Physiology) School of Veterinary Medicine, Auburn University, 1972

B.A.: (Psychology, Chemistry) Auburn University, 1970

RESEARCH INTERESTS

Clinical research, clinical research informatics, human research protections, ethics of clinical research, immunology, autoimmunity, endocrinology

PIVOTAL EVENTS

My grandmother was widowed with two young children and another on the way as a new emigrant. She taught me that life is what you make of it and it was best to make it something you enjoy. Her independence, intelligence, work ethic, and love provided an enduring example. A turning point for me in my scientific life came when I made the move from the bench to the administration of science. This seemed a hard decision at the time, but allowed me to broaden my vision and encouraged me to immerse myself in new areas of science. The experience is still stimulating and has enabled me to make connections between various scientific fields that I could never have imagined.

MENTORING & WORK/LIFE BALANCE

Challenges that require acquisition of new knowledge and/or creative collaborations have led to interactions with individuals who have taught me much about science, leadership, fun, frustration, growth, satisfaction, and life itself. I have learned as much from the young as the mature. These "mentors" have come from both personal and professional challenges and the lessons have crossed the boundaries. Life is a tapestry of work, responsibility, play, love, learning, roles, and grief. I have given up on balance and embraced messy integration.

NCRR

Franziska Grieder, D.V.M., Ph.D.

Director, Division of Comparative Medicine

EDUCATION

Postdoctoral Fellowship: (Microbiology and Immunology) University of North Carolina, Chapel Hill, 1990–1992

Ph.D.: (Pathobiological Sciences) University of Wisconsin-Madison, 1989

M.S.: (Pathobiological Sciences) University of Wisconsin-Madison, 1987

Dr. Vet. Med.: (Virology) University of Zurich, Switzerland, 1987

D.V.M.: University of Zurich, Switzerland, 1984

Baccalaureate: Gymnasium Lindau, Germany, 1979

RESEARCH INTERESTS

Molecular genetics of viral pathogenesis, viral-induced neuroimmunology and neurodegeneration, emerging viral threats

PIVOTAL EVENTS

As a high school—or in my case, gymnasium—student, I spent a day with our family dog in a veterinary hospital while the puppy underwent neutering. This experience changed my career path—I was determined to become a veterinarian. As a junior and senior veterinary student, I worked in the veterinary teaching clinic assisting the attending veterinarians. I loved the interactions with the pets and owners, the exam, and diagnostic approaches. Recognizing that I enjoyed the investigative part of medicine better than the treatment, I decided on the path in research.

To fulfill this goal, I moved from Europe to the United States to pursue graduate research training and a career in academic biomedical research. Recognizing that veterinary medicine needs to be partnered with human medicine for a productive 'One-Medicine' concept, I used my experience as a researcher at two medical schools prior to joining the NIH.

MENTORING & WORK/LIFE BALANCE

During my tenure as a full-time academician, I greatly enjoyed teaching, both in the classroom (although, I can do without the question "will this be on the exam?") and on a one-on-one basis with students and postdocs alike. To me, teaching was never a burden, but always rewarding; to see students or postdocs advance to where they develop their own experiments and contribute information from the literature or seminars to support their conclusions is tremendously rewarding.

Balancing family and career is very challenging, especially when situations change such as during a relocation or an illness. I have personally experienced my share of such enhanced challenges and have witnessed others go through rough times. Determination, courage, and a strong network of supporting family and friends are key factors in those settings. It is difficult to make it through misery—it is much harder to get through alone.

Shelia A. McClure, Ph.D.

Health Scientist Administrator and Director, Research Centers in Minority Institutions Program, Division of Research Infrastructure

EDUCATION

Postdoctoral Fellowship: (Cancer Research) The Upjohn Company, Kalamazoo, MI, 1987

Postdoctoral Fellowship: (Growth Factor Biology) University of California, Berkeley, 1985

Ph.D.: (Cell Biology) University of California, Berkeley, 1985

B.S.: (Biology) Savannah State University, 1978

RESEARCH INTERESTS

Tumor biology and cancer research

PIVOTAL EVENTS

Much of the success that I've achieved in my professional life is attributable to having great mentors that encouraged me to pursue a career that I was passionate about. My parents always stressed the importance of enrolling in courses that I found interesting and that challenged me academically. They were a continual source of support and encouragement, and their high expectations resulted in my having confidence in my abilities and high expectations of myself. In addition to my parents, the mentors most important to my becoming a scientist were my professors at Savannah State University. In addition to serving as excellent role models, Drs. Margaret Robinson and Frissell R. Hunter also fostered my participation in biomedical research. As an undergraduate, I had the opportunity to conduct research, give presentations at scientific meetings, and co-author scientific papers. These experiences were certainly pivotal events that led to my becoming a cell biologist.

MENTORING & WORK/LIFE BALANCE

Choosing a work environment that supported my work/life balance needs has always been important. I began my professional career as an assistant professor in the Biology Department at Spelman College in Atlanta, GA. During this same time, I was also starting my family. Even though I was working extremely long hours and focusing on being promoted and tenured, my work environment was very supportive of my family obligations. For example, I was in an environment where other women scientists mentored me during this time when work/life balance was so crucial. It also helped that my workplace had exceptional onsite child care with extended morning and evening hours. Without a doubt, these positive experiences allowed me to have a fulfilling professional and family life. My decision to leave my tenured faculty position and come to the NIH was strongly influenced by my division director at NCRR Dr. Sidney A. McNairy, Jr. He serves as a mentor, encourages mentoring as a core value in our division, and has an appreciation for the importance of work/life balance in fostering a productive workforce.

Gunta Iris Obrams, M.D., Ph.D.

Medical Officer (Research),
Division for Clinical Research Resources

EDUCATION

Ph.D.: (Epidemiology) The Johns Hopkins University, 1988

M.P.H.: (Epidemiology) The Johns Hopkins University School of Public Health, 1982

Residency: (Preventive Medicine) The Johns Hopkins University School of Public Health, 1981–1984

Residency: (Obstetrics & Gynecology) Eastern Virginia School of Medicine, Norfolk, VA, 1977–1978

M.D.: Albany Medical College, 1977

B.S.: (Biology) Rensselaer Polytechnic Institute, Troy, NY, 1977

RESEARCH INTERESTS

Leadership and administration of transdisciplinary clinical research programs; clinical research program policy development, budget management, and program evaluation; epidemiologic methods in planning, conducting, and evaluating clinical research; chronic disease epidemiology, etiology, and prevention; compliance with regulations and legislative initiatives in clinical research and managed care; implementation of medical informatics and patient safety programs; compliance with data privacy and security regulations in clinical research and protection of research participants.

PIVOTAL EVENTS

After practicing clinical medicine for a number of years, I had to ask myself whether I wanted to continue to improve my clinical skills yet essentially do similar tasks and make similar decisions day after day until the end of my working career. The answer was clear—I was being called back to academic medicine and the lure of research, which held the promise of new avenues to explore.

MENTORING & WORK/LIFE BALANCE

I was very fortunate in coming to NIH that there are fantastic mentors, both female and male, here who make extraordinary efforts to help shape the complex careers that NIH can offer.

Amy L. Swain, Ph.D.

Health Scientist Administrator,
Division of Biomedical Technology

EDUCATION

Ph.D.: (Chemistry) University of South Carolina, 1988

B.S.: (Biology) Frostburg State College, Frostburg, MD, 1983

RESEARCH INTERESTS

Structural biology in the broadest sense, from atomic to cellular level

PIVOTAL EVENTS

As a postdoctoral fellow in a protein crystallography laboratory at NCI, I solved the crystal structure of a large enzyme that had been unattainable by others. This achievement was only possible thanks to the supercomputing capacity that I had access to at NCI. It was an amazing feeling to realize that I was the first person ever to view this structure as I built the chain of the enzyme into the data represented on the colorful graphics screen. This enzyme, asparaginase, is used for the treatment of acute lymphoblastic leukemia in children.

After gaining experience with enzyme-drug complexes through structural studies of the HIV protease at NCI, I took a position at a pharmaceutical company. I worked in drug discovery and development at Hoffmann-La Roche Inc. for 5 years as a crystallographer on a variety of projects in multidisciplinary research teams. The mutual respect and learning that comes

from working together with scientists from multiple disciplines toward a single goal was rewarding and challenging.

In 1999, the opportunity to broaden my scientific perspective presented itself and I accepted the position at NCRR as a Health Scientist Administrator. Although I had enjoyed being a crystallographer, I was not fully satisfied working in the laboratory. This new position allowed me to expand my horizons and engage daily with the scientific community. Since coming to NCRR, my knowledge of structural biology has expanded from the atomic level using crystallography and synchrotron radiation techniques to the cellular level and microscopy technologies. I have enjoyed learning about cutting-edge biomedical technologies from the leaders in the field and have been able to apply my background knowledge to create further opportunities for essential developments in structural biology technologies.

MENTORING & WORK/LIFE BALANCE

I received critical mentoring as a postdoctoral fellow at NCI where I learned the very practical applications of crystallography from Dr. Alexander Wlodawer. He was a valuable counselor as I finished up my Ph.D. dissertation and he provided me with challenging opportunities in my postdoctoral position. In my current position as a Program Officer at NCRR, I am very fortunate to have an excellent mentor, Dr. Michael Marron. In addition to helping me to advance my career, Dr. Marron has been very sensitive to the demands of family life. He has allowed me a flexible schedule, including some telework to permit me to care for children and an aging parent even as I continue advancing in my professional career.

Dr. Louise Ramm has also been a valuable mentor to me in the areas of policy and administration. She has provided me the opportunity to grow into a position of responsibility for the small business grant program at NCRR in addition to representing NCRR in trans-NIH forums.

Now I have opportunities to be a mentor within NCRR, a responsibility I take seriously. I find myself learning as much or more from the people I mentor as they do from me.

National Institutes of Health Clinical Center

Marion Danis, M.D.

Chief, Ethics Consultation Service; Head, Section on Ethics and Health Policy, Department of Bioethics

EDUCATION

Fellowship: (Critical Care) University of North Carolina, Chapel Hill, 1983–1985

NIEHS Research Fellowship: (Toxicology) University of North Carolina, Chapel Hill, 1979–1982

Residency: (Internal Medicine) North Carolina Memorial Hospital, Chapel Hill, NC, 1976–1978

Internship: (Internal Medicine) North Carolina Memorial Hospital, Chapel Hill, NC, 1975–1976

M.D.: University of Chicago, 1975

B.A.: (Biology) University of Chicago, 1971

RESEARCH INTERESTS

Clinical ethics and ethics of rationing

PIVOTAL EVENTS

At the end of my NIEHS fellowship training, I was asked to run the intensive care unit at the University of North Carolina. I had been advised by my division chiefs to focus on research questions that addressed the tough questions we face in clinical practice. I began to explore questions that lie at the heart of intensive care: How interested are critically ill patients in receiving intensive care? Does quality of life and life expectancy influence their interest in life-sustaining treatments? To our surprise, we found that people were extremely willing to receive intensive care even if they were likely to survive for as short a time as 1 month. This finding posed a monumental dilemma because accommodating this preference is an exorbitantly expensive proposition. These results provided the focus for the question I have been interested in for the rest of my career—how can we balance respect for patient preferences with the need to distribute limited healthcare resources fairly?

MENTORING & WORK/LIFE BALANCE

Successfully pursuing career, marriage, and family has been a bit of a tight rope act. I find that I am happiest acknowledging that all these pursuits are important to me and that each pursuit must give way at times. Some of the insights that have been useful are that it is important to be flexible, and accept some serendipitous job opportunities even if they do not obviously take you on the path you had expected or planned. Use some of the strategies recommended for highly effective people—prioritize those activities that help you achieve your long-term goals rather than those activities that seem the most immediately pressing. Don't become overly preoccupied about your personal success—if you are doing work that you believe matters and will make a difference in tackling pressing problems, others will recognize the value of your work and your success will follow.

INSIGHTS

Because of my research on patient and family preferences for intensive care, I was invited to chair the Ethics Committee of the Society of Critical Care Medicine. Other important opportunities included chairing the Ethics Committee at the University of North Carolina Hospitals and Clinics. My research on patient preferences at the end of life and my experience with ethics consultation, led to the invitation to join the Department of Bioethics at the NIH Clinical Center where I run the Clinical Center Ethics Consultation Service and the Section on Ethics and Health Policy. After coming to the NIH, I continued to explore strategies for balancing the competing concerns of respect for patient preferences and the need to distribute limited resources fairly. My current work is centered on strategies for public engagement in priority setting and rationing. A central part of this research has involved the design of decision tools to facilitate public deliberation about the design of affordable health insurance and other interventions to improve health. These decision tools are currently available and in use by several State governments. I am particularly interested in increasing access to care and improving the health of disadvantaged populations. One of the publications that best reflects the focus of my work is the book, "Ethical Dimensions of Health Policy," which I edited in collaboration with Carolyn Clancy and Larry Churchill and published by the Oxford University Press.

Christine Grady, Ph.D., R.N.

Head, Section on Human Subjects Research, Department of Bioethics

EDUCATION

Ph.D.: (Philosophy)
Georgetown University, 1993

M.S.N.: (Community Health Nursing)
Boston College, 1978

B.S.: (Nursing and Biology)
Georgetown University, 1974

RESEARCH INTERESTS

The ethics of research with human subjects, especially informed consent, recruitment and incentives, vulnerability, international research; clinical ethics

PIVOTAL EVENTS

Throughout my clinical career as a nurse, I was privileged to have many amazing practice opportunities in diverse settings. From academic medical centers, to an NIH-funded General Clinical Research Centers (GCRC), to small community hospitals, rural public health, Project Hope in Brazil, and then the NIH Clinical Center, I encountered the value of rigorous science, courageous patients and peers, and innumerable ethical challenges in practice and in research. After receiving my doctorate in philosophy, I was fortunate to be well-prepared and at the NIH when the extraordinary vision and leadership of both Dr. Gallin and Dr. Emanuel resulted in the creation of a vibrant Department of Bioethics. I attribute my success as a scientist at the NIH Clinical Center to a supportive and intellectually rigorous environment, exemplary leaders and colleagues, and hard work.

MENTORING & WORK/LIFE BALANCE

Like so many others, I strive to achieve a healthy balance between my personal life and my professional responsibilities. In my case and with the support of my supervisors, I was able to build some flexibility into my schedule and develop some strategies that served my commitments to quality science and my job responsibilities while allowing me to take advantage of precious opportunities to participate in the lives of my spouse and three wonderful daughters. For example, taking leave to attend a school play or a sports event sometimes required catching up on work at 4 am or midnight. Sometimes bringing the girls with me into the office on a weekend afternoon, or finding time for a conference call or reviewing a manuscript while on vacation at the beach, and similar compromises helped me to attend to both sides of my life.

INSIGHTS

Encouragement from my family and enormous opportunities for education and experience all served to launch me on the career path that I have chosen. Interestingly, my career does not correspond to a long-held dream or a well-crafted plan. Rather, I dove into each job I have had with enthusiasm, followed leads, both intellectual and otherwise, and took advantage of challenges that presented themselves to me along the way. The result is a career with multiple branches. Many of the milestones and accomplishments that I have been able to achieve were possible because I was here at the NIH. The intellectual stimulation, leading-edge science, and superb colleagues have and continue to motivate me to work hard and try to make a difference.

Deborah P. Merke, M.D.

Chief, Pediatric Services

EDUCATION

Fellowship: (Pediatric Endocrinology) National Institute of Child Health and Human Development, 1994–1997

Residency: (Pediatrics) Children's Hospital of Philadelphia, 1991–1994

M.D.: State University of New York at Buffalo, 1991

M.S.: (Biostatistics) Columbia University School of Public Health, 1986

B.S.: (Interdisciplinary Studies) University of Massachusetts, Amherst, 1982

RESEARCH INTERESTS

My research focuses on the study of congenital adrenal hyperplasia (CAH), a genetic disease that affects adrenal hormone synthesis. I strive to understand the impact of multiple hormonal imbalances on the growth and development of children and hormonal effects on the brain, and ultimately develop new treatment approaches. In my role as Chief of Pediatric Services at the NIH Clinical Center, I strive to bring exemplary pediatric care and consultation to Clinical Center patients.

PIVOTAL EVENTS

My background is a bit unusual in that prior to going to medical school, I obtained a master's degree in biostatistics from Columbia University and worked in the Biostatistics Department of Memorial Sloan Kettering. My training in biostatistics taught me how to think like a "scientist." Then in medical school, I was taught how to think like a "clinician." During my last year of medical school at SUNY at Buffalo, I did an away elective at the NIH. As part of this elective, I spent 1 day a week at the Clinical Center, seeing pediatric patients with rare genetic syndromes and interacting with clinical investigators. For the first time, my training in scientific methodology and clinical medicine came together and I realized that my passion for both types of thinking could merge into an ideal career. My month as a medical student doing an elective at the NIH was a pivotal event in my decision to pursue a career in clinical research.

MENTORING & WORK/LIFE BALANCE

Balancing my personal life with my professional responsibilities and aspirations has always been my biggest challenge and, unfortunately, it remains a bigger challenge for women than for men in today's society. I've been very lucky in that my superiors/mentors have had incredibly high standards, but have also been very supportive. Without on-the-job support, this balancing act would not have been possible. Having a family while having a successful career has been possible by remaining persistent, being organized, having flexible hours in the sense that I've always been willing to work late night hours to get things done, and admitting that sometimes I can't do it all. I've found advice from other women professionals extremely useful in navigating childcare issues. I try to mentor women in-training by example, by being successful as a clinical investigator, pediatrician, wife, and mother. I also try to be a good role model for my two daughters by sharing positive work experiences.

INSIGHTS

Although my excellent training and mentors have influenced me greatly in my career, and collaborations with colleagues have been very fruitful, perhaps my greatest inspiration has come from my patients and the personal satisfaction I gain from helping others. I am continually impressed by the deep commitment patients and parents have toward participating in research and the desire they have to help others with the same disease. As a mother of healthy children, I am amazed by the strength of the parents of children with significant diseases, and how they and their children contribute to medical research. My most memorable accomplishments are my experiences with patients and their families. In my role overseeing pediatric care at the Clinical Center, I have had the unique opportunity to interact with patients with a wide range of diseases and clinical investigators from across multiple Institutes.

CC

Some of my most significant research contributions in the study of CAH have emerged from listening carefully to patients and their parents regarding signs and symptoms of their disease, and then balancing this with a scientific perspective. Being a mother has helped me respect mothers' observations regarding their children's condition and honed my listening skills. Ideas for many studies first began by listening to mothers describe unusual symptoms in their children.

My scientific accomplishments have resulted from the combination of being a good listener, taking advantage of opportunities as they arise, and remaining determined no matter what the obstacle. Producing good work has inevitably led to new career opportunities for me, including invited international talks, and exciting new collaborations with investigators both across NIH and at outside institutions.

Zenaide Quezado, M.D.

Chief, Department of Anesthesia and Surgical Services

EDUCATION

Clinical Fellowship: (Burn Care) Shriners Hospital for Children, Shriners Burns Hospital-Boston, 1999

Clinical Fellowship: (Cardiac Anesthesia) Massachusetts General Hospital, Harvard Medical School, 1998–1999

Residency: (Anesthesia and Critical Care) Massachusetts General Hospital, Harvard Medical School, 1996–1999

Clinical Care Medicine Fellowship: (Sepsis and Septic Shock) Critical Care Medicine Department, NIH, 1990–1994

Residency: (Internal Medicine) Albert Einstein Medical Center, Temple University, 1987–1990

M.D.: Universidade Federal do Ceara Fortaleza, Ceara, Brazil, 1983

RESEARCH INTERESTS

Role of neuronal nitric oxide synthase in nociception, role of neuronal nitric oxide and TRPV1 in inflammatory response during sepsis

PIVOTAL EVENTS

The pivotal events were those that left me inspired to pursue knowledge, to be better, and to improve the life of others. Over the years, I have been inspired by my father with whom I competed to solve math problems, by my mother who, as a woman living in a place where women have less opportunities, has reminded me that I can and always must do better, by a teacher in medical school who taught me to ask why and how, by my first patient who died of sepsis during my ICU rotation, by the environment at the NIH when I first worked as a fellow where "why" and "how" are often the beginning of many sentences.

Also pivotal to my success has been to often witness the pain and suffering of patients and their families. These events have inspired me to investigate the mechanisms of disease and to pursue its treatment.

MENTORING & WORK/LIFE BALANCE

While I have often been inspired by great scientists and colleagues, I found that mentoring was one of the deficiencies in my experience. We must do better in mentoring women in science and in medicine. It is an issue deserving of great attention if we want more women to succeed and to add to the scientific environment in this country.

Balancing personal life and professional responsibilities has been a challenge. Inevitably, as a woman pursuing an academic career, one might make choices that can jeopardize either personal life or professional path. The ideal is to have it all, which is not always possible. I have a sister, also in science who has been able to reconcile a very active family life with a successful career and still be lots of fun. She is unique.

INSIGHTS

While often I have been reminded that I am in a minority, that there are not many women in science who reach the upper tiers in academia, and that many challenges exist in its pursuit, the most important thing I have gotten from being a scientist is to have lived the process of pursuing knowledge and to have acquired the determination to answer a question. There is great reward in often being surprised by results of experiments, working with and being inspired by colleagues, in often being wrong and sometimes proven right. Having been a scientist has shaped the way I live, think, and relate to others. There is nothing more enjoyable than having discussions with your colleagues, looking at results of an experiment, witnessing a great experimental design come to completion, struggling with the statistician to decipher your results and tell your story.

I hope that some time soon, we will be able to drop the "woman" of "being a woman scientist" so that we can witness more significant contributions many of us can make to science. We have lots to offer and to contribute to the field; however, we have to work on shifting the paradigm to which we, as women, are expected to mold. Women in science do face a complex and multifaceted problem and those who have succeeded have the responsibility to address it.

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