

National Institute of Environmental Health Sciences

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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

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(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 fishermen 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

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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.



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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 DeMoraes. 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-

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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 Interna-
tional Development, 1992–1994

Ph.D.: (Pharmacology and
Molecular Sciences) The Johns Hopkins University School
of Medicine, 1992

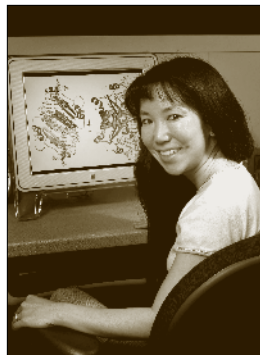
B.S.: (Biochemistry) University of California,
Los Angeles, 1986

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

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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

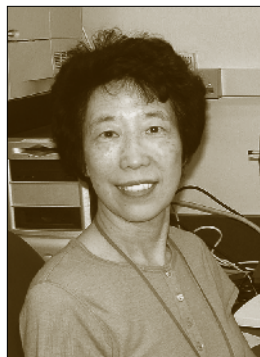
EDUCATION

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 (ERR α) - biological role(s) and regulation of expression by PGC-1 α , estrogen and environmental estrogens; lactoferrin and ERR α 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

NIGMS

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

NIGMS

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, post-graduate 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.

NIGMS

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

NIMH

Jacqueline N. Crawley, Ph.D.

*Chief, Laboratory of Behavioral Neuroscience,
Division of Intramural Research Programs*

EDUCATION

Postdoctoral Fellowship:
(Neuropsychopharmacol-
ogy) 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 cholecystinin 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

NIMH

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

NIMH

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.

NIMH

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.

NIMH

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

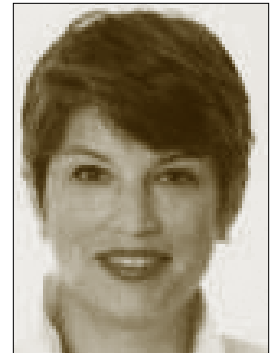
EDUCATION

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 car-pool 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

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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.

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.

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

National Institute of Neurological Disorders and Stroke

NINDS

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

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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 Apprenticeship 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

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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, thalamo-cortical 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.

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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 neuro-muscular 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 neuro-intensive 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

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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 (NCP) 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 through 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.

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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 id-



iopathic 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 neuro-modulators on developing cortical neurons and their neuro-protective 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.