

Division of Intramural Research

NAEHS Council Update

June 2015

DIR RECRUITMENTS

Investigators in Epidemiology

The National Institute of Environmental Health Sciences is recruiting for one or more full-time Tenure-Track Epidemiologists. The successful candidate(s) will be expected to develop an outstanding, investigator-initiated independent epidemiology research program on human health outcomes. Applicants are welcome with expertise in any of the following areas: reproduction, pregnancy outcomes, pediatric outcomes, early origins of disease, life course epidemiology, adult health/chronic disease, or other areas of environmental epidemiology. Biologically-based epidemiological research (including genetics, epigenetics, metabolomics, microbiomics, and biomarkers) is especially encouraged. Successful candidates will be expected to have the ability to work independently and as part of multi-disciplinary and/or collaborative teams. Candidates should have a Doctoral degree and a record of accomplishment in epidemiology, including a strong publication record and research experience. Dr. Janet Hall, Clinical Research Branch, is chair of the search committee.

Deputy Chief of the Comparative Medicine Branch

The National Institute of Environmental Health Sciences (NIEHS) is searching for Veterinary Medical Officer to serve as Deputy Chief of the Comparative Medicine Branch (CMB), Facility Veterinarian, and Deputy Animal Program Director. CMB provides a broad range of services and collaborative support for NIEHS intramural research programs. The incumbent will be responsible for assisting the Chief CMB with the management of an AAALAC accredited animal care and use program and for support of NIEHS animal research programs that study the effects of environmental agents in order to develop methods of disease prevention and treatment. Candidates should have a Doctor of Veterinary Medicine (DVM) or equivalent degree, i.e., Veterinary Medical Doctor (VMD), obtained at a school or college of veterinary medicine accredited by the American Veterinary Medical Association Council on Education; have a permanent, full, and unrestricted license to practice veterinary medicine in a State, District of Columbia, the Commonwealth of Puerto Rico, or a territory of the United States; and be board certified by the American College of Laboratory Animal Medicine (ACLAM) or equivalent. Dr. Kathy Laber, Chief of the Comparative Medicine Branch, is chair of the search committee.

Scientific Information Officer

The National Institute of Environmental Health Sciences is searching for an exceptional candidate to serve as the Scientific Information Officer (SIO). The SIO will head a dynamic office focused on the interface between cutting edge scientific computing and scientific exploration, discovery and translation. It is critical that our institute is able to fully harness advances in scientific computing and science information technology to meet our research mission. We are seeking an outstanding leader who will create an environment where scientific computing catalyzes our research program. The successful candidate will: 1). Advise the NIEHS Scientific Director, Division of the National Toxicology Program Director, NIEHS Leadership and other experts throughout the NIEHS on a variety of complex, unique and/or sensitive situations and issues in scientific computing; 2). Provide a vision for scientific computing and the extraction and use of knowledge from the data generated by and relevant to NIEHS research; 3). Lead the NIEHS in application of new methods and technologies emerging from the field of data science and "big data" as well as advancing the use of cloud and distributed computing

approaches; 4). Coordinate ongoing scientific computing activities with other Institutes/Centers throughout NIH, other federal agencies and other institutions as it relates to fostering the adoption and training of new, effective technologies and procedures for scientific computing and manipulating and interpreting large and complex data generated by researchers in the environmental health sciences community; 5). Set up relevant training and educational programs to ensure scientists at NIEHS are knowledgeable about the institute resources in these areas; 6). Work in concert with the Chief Information Officer (CIO) at NIEHS to ensure that NIEHS IT assets are planned for and deployed to meet needs; and 7). Work with other NIEHS groups that consume and provide scientific IT capabilities including the Integrated Bioinformatics Core Facility and Biostatistics/Computational Biology Branch to ensure effective use of NIEHS resources. Applicants should have a degree in a biological science, agriculture, natural resource management, chemistry, or related disciplines appropriate to this position. Dr. Traci Hall, Epigenetics and Stem Cell Biology Laboratory, is chair of the search committee.

NEW HIRES AND CHANGES IN DIR LEADERSHIP

Molecular and Cellular Signaling, Neuroscience, and Developmental or Reproductive Biology

Dr. Dante Bortone from the Center for Neural Circuits and Behavior, Howard Hughes Medical Institute, University of California-San Diego, La Jolla, CA, has been offered a tenure-track position in DIR at NIEHS. Dr. Bortone studies the developmental origin of neurons in the visual cortex. Dr. Bortone has accepted our provisional tenure-track offer. He will have a primary appointment in the Neurobiology Laboratory and a secondary appointment in the Reproductive and Developmental Biology Laboratory. His tentative start date is in the spring of 2015.

Dr. Jennifer Martinez from the Department of Immunology, St. Jude Children's Research Hospital, Memphis, TN, has been offered a tenure-track position in DIR at NIEHS. Dr. Martinez studies how cells of the innate immune system process extracellular material, and how these events affect subsequent immune responses. Dr. Martinez has accepted our provisional tenure-track offer. She will have a primary appointment in the Immunity, Inflammation and Disease Laboratory and a secondary appointment in the Signal Transduction Laboratory. Dr. Martinez started at NIEHS on March 9, 2015.

Dr. Francesco DeMayo from the Department of Molecular and Cellular Biology, Baylor College of Medicine, Houston, TX, has tentatively accepted a position as a tenured Senior Scientist in the Reproductive and Developmental Biology Laboratory. Dr. DeMayo investigates the molecular regulation of cellular differentiation and physiology in the lung and uterus in order to shed light on molecular pathways to aid in the diagnosis and treatment of human disease with the goal of helping design treatments for pulmonary diseases and infertility. He is scheduled to start at NIEHS in the summer of 2015.

Lasker Clinical Research Scholar

Dr. Natalie Shaw from the Department of Pediatrics, Harvard Medical School, Boston MA, has tentatively accepted a position as a NIH Lasker Clinical Research Scholar in DIR at NIEHS. She will have a primary appointment in the Clinical Research Branch and a secondary appointment in the Reproductive and Developmental Biology Laboratory. Dr. Shaw investigates the environmental and hormonal factors that control puberty. Using clinical research tools she explores how the sleep centers of the brain may influence the hypothalamic gonadotropin-releasing hormone (GnRH) neuronal network that drives the reproductive axis. She is scheduled to start at NIEHS in the Fall of 2015.

NEWLY TENURED DIR PRINCIPAL INVESTIGATOR

At the April 6, 2015 meeting of the NIH Central Tenure Committee held in Bethesda **Dr. Xiaoling Li** of the Signal Transduction Laboratory was awarded tenure.

Research Summary
Xiaoling Li, Ph.D.
Metabolism, Genes, and Environment Group
Signal Transduction Laboratory
DIR, NIEHS

The long-term goal of our research is to understand how organisms monitor environmental changes and coordinate cellular signaling pathways to regulate biological processes associated with metabolic homeostasis and inflammation. To achieve this goal, we study the functions of sirtuins, key cellular metabolic sensors that regulate metabolism, stress responses, and possibly longevity. Understanding how sirtuins are regulated as well as how they modulate energy metabolism and stress responses can provide the molecular basis for new therapeutic strategies against human metabolic diseases.

Our efforts at NIEHS have focused on the role of SIRT1, the most conserved mammalian sirtuin, in energy metabolism, inflammation, and stress responses, as well as the molecular mechanism underlying environmental regulation of SIRT1 activity. Using a combination of biochemical, molecular, cellular, and genetic approaches, we have demonstrated that SIRT1 is a key regulator of metabolism and inflammation in response to nutrient signals and environmental stress in a number of tissues, and is also critical in the regulation of embryonic stem cell pluripotency, differentiation, and animal development. Moreover, we discovered that the activity of SIRT1 itself is modulated by phosphorylation modification independently of cellular NAD⁺ levels upon environmental stress, and this modification activates SIRT1 through preventing the formation of less-active SIRT1 oligomers/aggregates. In the future, we plan to continue to study the function of SIRT1 in metabolism, inflammation, stem cell biology and animal development, and to dissect the molecular mechanisms and *in vivo* functions of phosphorylation modification of SIRT1.

DIR RESEARCH UPDATE

Epidemiology:

Contributing to basic science by looking at the big picture

Allen Wilcox, M.D., Ph.D.

Epidemiology Branch, DIR NIEHS

Epidemiology is usually thought of as the scientific arm of public health. The macro-level observations of epidemiology can also provide insights or raise fundamental hypotheses of interest to laboratory scientists. Some examples come from NIEHS epidemiologic studies of fertility and pregnancy. The number of fertile days in a typical human menstrual cycle – long underestimated by biologists – was resolved in an epidemiologic study. Another example from epidemiology is the discovery of a connection between the rate of development of a fertilized human egg and the rate of fetal maturation. Finally, new data show a connection between a mother's age and gene methylation in her newborn – suggesting the possibility of undiscovered mechanisms of methylation.

TRAINING AND MENTORING

2015 NIEHS Biomedical Career Symposium

The Eighteenth Annual NIEHS Biomedical Career Symposium was held Friday, April 24, 2015 at the Environmental Protection Agency Campus, Research Triangle Park, NC. The keynote address entitled “‘But I Have No Skills!’ Debunking Myths and Exploring Career Options for PhDs” was delivered by Melanie Sinche, Senior Research Associate, Labor and Worklife Program, Harvard Law School. Areas covered in the symposium included: CV/ Résumé Consultation; Career Panels covering Writing/Communication, Medical Science Liaison/Field Application Specialist, Running Your Own Lab, Industry, Consulting, Teaching, Contract Research Organization and Scientific Review Officer/Grants Management; and workshops which discussed: Untrain Your Brain: Achieving Synergy Between Personal and Professional Interests, How to Get That First Job, Networking: A Tool for Exploring Careers & Building Professional Relationships, Local Resources for Identifying Career Opportunities, Leadership and You: Balancing Strengths and Challenges, Negotiating Non-Academic Job Offers, How to Develop the Skills Needed for Careers in Science Outreach and Program Administration; Managing Your Research Career Using an Individual Development Plan, Leveraging LinkedIn for Expertise Development and Career Opportunities and Starting Your Own Lab.

There were more than 300 registered attendees from universities and research institutions in the Triangle Area and the rest of North Carolina. This event was cosponsored by the NIEHS, Office of Scientific Director; NIEHS Trainees Assembly and the Environmental Protection Agency.

Panelists, Reviewers and Presenters included:

- Janice Allen, Ph.D., Scientific Review Officer, NIEHS/DERT
- Sibby Anderson-Thompkins, Ph.D., Director of the Office of Postdoctoral Affairs, University of North Carolina
- Drew Applefield, Ph.D., Associate Director, Business and Technology Development, North Carolina Biotechnology Center
- Robin Arnette, Ph.D., Science Writer/Editor, NIEHS
- Amy Blackburn, M.S.Ed., Sr. Assistant Director for Graduate Students, University of North Carolina
- William Blackmon, Founder and CEO, Apogee Social Media Group
- Lisa Bonner, Ph.D., Professor, William Peace University
- Melissa Bostrom, Ph.D., Assistant Dean for Graduate Student Professional Development, Duke University
- Michael Boyle, Ph.D., DVM, DACVP, DABT, Principal Pathologist, Amgen
- Patrick Brandt, Ph.D., Director of Career Development and Training, University of North Carolina
- Nisha Cavanaugh, Ph.D., Director, Office of Postdoctoral Affairs, North Carolina State University
- Jonathan Ciencewicky, Ph.D., Research Scientist, Grifols, Inc.
- Tammy Collins, Ph.D., Director, Office of Fellows' Career Development, NIEHS/NIH
- Lori Conlan, Ph.D., Director, Office of Postdoc Services, ORD/NIH
- Nicole Connelly, Ph.D., Director, Quintiles

- Carolyn Couch, M.A., Online Career Counselor, University of North Carolina
- Lorriane Cramer, Ph.D., Lecturer (Faculty member), University of North Carolina
- Leila Emery, M.A., Research Square
- Ashalla Freeman, Ph.D., Director, Diversity Affairs and the Initiative for Maximizing Student Diversity, School of Medicine, University of North Carolina
- Maria Gallardo-Williams, Ph.D., Teaching Associate Professor, North Carolina State University
- Ali Ghiassi, Account Manager, Aerotek Scientific
- Heidi Scott Giusto, Ph.D., Owner and Reviewer, Career Path Writing Solutions
- Manasa Gudheti, Ph.D., Applications Scientist, Bruker
- Jeffrey Harris, Ph.D., Senior Scientist, Celgene Cellular Therapeutics
- Jenna Hartwell, M.Ed., Career Counselor, Career Development Center, North Carolina State University
- Jonathan Hollander, Ph.D., Program Director, DERT/NIEHS/NIH
- Erin Hopper, Ph.D., Research Director, Office of Research and Graduate Education, University North Carolina
- Mike Humble, Ph.D., Program Director, DERT/ NIEHS/ NIH
- Melanie Jardim, Ph.D., Medical Science Liaison, United Therapeutics
- Megan Kendellen, Ph.D., Medical Writer, Quintiles
- Diane Klotz, Ph.D., Director, Office of Training & Academic Services, Sanford-Burnham Research Institute
- Anne Lai, Ph.D., Research Scientist, Genomic Research and Development, Expression Analysis, Quintiles
- Susan Lankford, Ph.D., Program Analyst, Science and Technology Development, North Carolina Biotechnology Center
- Michael Markowitz, MD, MSPH, MBA, Medical Director, CNS Practice, UCB Biosciences, Inc. Raleigh, NC
- Sharon Milgram, Ph.D., Director, Office of Intramural Training & Education, NIH
- Stacy Millon, Ph.D., Sr. Clinical Analytics and Simulations Lead, Quintiles
- Barmak Modrek, Ph.D., MBA, Bioinformatics Software Development Leader, GE Healthcare
- Sarah Mudrak, Ph.D., Product Management Director, Research Square
- Beth Overman, Ph.D., Director, Graduate Academic and Professional Development Programs, North Carolina State University
- Patricia Phelps, Ph.D., Founder and CEO, Geeks-N-Taps
- Amy Rawls, Ph.D., Recruitment and Talent Development, Research Square
- Jen Richmond-Bryant, Ph.D., Research Physical Scientist, US EPA
- Denise Saunders, Ph.D., Career Counselor, OITE/NIH
- Paul Schlosser, Ph.D., Environmental Health Scientist, US EPA
- Maria Schroeder, Ph.D., Associate Clinical Project Management Director, Quintiles
- Barbara Sherry, Ph.D., Professor of Virology, North Carolina State University
- Melanie Sinche, NCC, M.Ed., M.A., Sr. Research Associate in the Labor and Worklife Program, Harvard Law School
- Daryl Spinner, Ph.D., MBA, Principal Life Science Consultant, Quintiles

- Molly Starback, M.S.L.S., Director, Office of Postdoctoral Services, Duke University
- Maria Stauffer, Senior Scientist, Bayer CropScience
- Katoria Tatum-Gibbs, Ph.D., Agricultural Research Chemist III - Global Consumer Safety, BASF
- Afton Thompson, Ph.D., Team Manager, Editing Services, Research Square
- Erica Troksa, Ph.D., Staff Scientist I, Covance, Inc.
- Dara Wilson-Grant, MS.Ed, NCC, LPC, Associate Director/Career Counselor; Owner/Consultant, UNC Office of Postdoctoral Affairs; Careers in Bloom
- Christopher Wingard, Ph.D., Professor of Physiology, East Carolina University

The NIH Pathway to Independence Award (K99/R00)

The Pathway to Independence (PI) Award Program is designed to facilitate receiving an R01 award earlier in an investigator's research career. The primary, long-term goal of the PI Award Program is to increase and maintain a strong cohort of new and talented, NIH-supported independent investigators. The PI Award will provide up to five years of support consisting of two phases. The initial phase will provide 1-2 years of mentored support for highly promising, postdoctoral research scientists. This phase will be followed by up to 3 years of independent support contingent on securing an independent research position. Award recipients will be expected to compete successfully for independent R01 support from the NIH during the career transition award period. The PI Award is limited to postdoctoral trainees who propose research relevant to the mission of one or more of the participating NIH Institutes and Centers.

- Li Wang, M.D, Ph.D., received a K99/R00 grant for his proposal entitled, "Chromatin Modulation in Cardiogenesis and Environmentally-Induced Heart Defects". Dr. Wang will train in the Epigenetics and Stem Cell Biology Laboratory under the mentorship of Dr. Guang Hu.

Environmental Mutagenesis and Genomics Society Award:

- Sara Andres, Ph.D., a Visiting Fellow in the Genome Stability Structural Biology Group, Genome Integrity & Structural Biology Laboratory, won the best New Investigator publication in *Environmental and Molecular Mutagenesis* for 2014. The award was for "Recognition and Repair of Chemically Heterogenous Structures at DNA Ends" and includes a \$250 US cash prize, a one-year free membership to the Environmental Mutagenesis and Genomics Society (EMGS), and free registration at the 2015 annual meeting of the EMGS, which will take place September 26-30, 2015 in New Orleans, Louisiana. Dr. Andres mentor is R. Scott Williams, Ph.D.

INTERNATIONAL ACTIVITIES IN DIR FOR FY 2014

Collaborative Research Projects

- Dr. Douglas Bell (Genome Integrity and Structural Biology Laboratory) collaborates with scientists at the Ludwig Institute for Cancer Research, Nuffield Department of Clinical Medicine, University of Oxford, Old Road Campus Research Building, Oxford, UK, to investigate the role of polymorphisms in p53 response elements in the development of cancer. This collaboration was supported in part by 1ZIAES100475.
- Dr. Honglei Chen (Epidemiology Branch) collaborates scientists at and Shanghai Fudan University Hua-Shan Hospital and Shanghai Cancer Institute in Shanghai to investigate diet and lifestyle risk factors for Parkinson's disease in China; and with scientists at the Karolinska Institute, Stockholm, Sweden to study the roles infections and early life exposures in relation to Parkinson's disease and potential interactions with genetic risk factors. This collaboration was supported in part by 1ZIAES101986.
- Dr. John Cidlowski (Chief, Signal Transduction Laboratory) collaborates with scientists at the University of Chile, Santiago, Chile and with scientists at the Instituto de Biología y Medicina Experimental (IBYME), Conecit, Buenos Aires, Argentina to study the physiology and pathophysiology of glucocorticoids. These collaborations were supported in part by 1ZIAES090057.
- Dr. Stavros Garantizotis (Acting Clinical Director and the Immunity, Inflammation and Disease Laboratory) collaborates with investigators at the Hospital Ramon y Cajal in Madrid, Spain to examine the effects of inhaled hyaluronic acid on cystic fibrosis patients. This collaboration was supported in part by 1ZIAES102605.
- Dr. Guang Hu (Epigenetics and Stem Cell Biology Laboratory) collaborates with investigators at the Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing, China, to investigate the impact of environmental factors on human cardiac development. This collaboration was supported in part by 1ZIAES102745.
- Dr. Anton Jetten (Chief, Immunity, Inflammation and Diseases Laboratory) has collaborations with scientists at Autoimmune Genetics Laboratory, University of Leuven, Leuven, Belgium to study the Kruppel-like zinc finger transcription factor in type 1 diabetes; with scientists at GlaxoSmithKline Ltd., Medicines Research Centre, Stevenage, United Kingdom, to study RORgamma antagonists and their role in the regulation of Th17 cells function, circadian rhythm and metabolism; and with scientists at the College of Medicine Soonchunhyang University Cheonan, Korea, to characterize and study the function of the novel protein LRRC36. These collaborations were supported in part by 1ZIAES101586 and 1ZIAES100485.
- Dr. Freya Kamel (Epidemiology Branch) collaborates with investigators at the Department of Medical Epidemiology and Biostatistics, the Karolinska Institute, Stockholm, Sweden to investigate ALS and Parkinson's disease. This collaboration was supported in part by 1ZIAES049005.

- Dr. Steven Kleeberger (Immunity, Inflammation and Diseases Laboratory) collaborates with scientists at the INFANT Foundation, Buenos Aires, Argentina, to study the role of innate immunity and antioxidant enzyme genes in respiratory syncytial virus infection and disease progression, and the role of oxidant susceptibility genes in severity of neonatal diseases associated with hyperoxic injury. This collaboration was supported in part by 1ZIAES100557.
- Dr. Thomas Kunkel (Genome Integrity and Structural Biology Laboratory) has collaborations with scientists at the Umeå University, Umeå, Sweden to investigate the functions and fidelity of DNA polymerase epsilon and the effects of dNTP pool imbalances on mutagenesis in yeast; with scientists at the University of Sussex, Brighton, UK to study DNA replication in fission yeast; and with scientists at Universita' degli Studi di Milano, Milan, Italy to study consequences of defects in yeast RNases H1 and H2. These collaborations were supported in part by 1ZIAES065070 and 1ZIAES065089.
- Dr. Robert London (Genome Integrity and Structural Biology Laboratory) collaborates with scientists at the University of Cartagena, Columbia, to compare the human anti-body response to allergens in different patient populations in North and South America. This collaboration was supported in part by 1ZIAES103026 and 1ZIAES103206.
- Dr. Stephanie London (Epidemiology Branch) organized an international consortium called Pregnancy and Child Epigenetics (PACE). This consortium brings together birth cohorts around the world with data on in utero exposures, pregnancy, child exposures and DNA methylation in newborns. PACE includes cohorts from the United States, The Netherlands, Norway, Sweden, Spain and France. Dr. London also worked with the CHARGE Consortium to lead a meta-analysis project on the forced vital lung capacity which involved collaboration among numerous cohorts in the United States, Europe, and Korea. Dr. London also collaborates with scientists at The Norwegian Institute of Public Health, Oslo, Norway to study the relation of early-life exposure in relation to childhood asthma and allergies. These collaborations were supported in part by 1ZIAES049019.
- Dr. Matthew Longnecker (Epidemiology Branch) has collaborations with scientists at the Erasmus University, Rotterdam, The Netherlands to study the effects of exposure to phthalates, bisphenol A, and organophosphate pesticides; with scientists at The Norwegian Institute of Public Health, Oslo, Norway to study the relation of early-life exposure to subsequent health; and with scientists at the University of Pretoria, Pretoria, Republic of South Africa, to study the effects of DDT on reproductive function. These collaborations were supported in part by 1ZIAES101575, 1ZIAES044008 and 1ZIAES102845.
- Dr. David Miller (Signal Transduction Laboratory) collaborates with scientists at University of Heidelberg, Germany, to study the mechanisms of regulation of ABC transporters in kidney and blood-brain barrier. This collaboration was supported in part by 1ZIAES080048 and 1ZIAES080056.
- Dr. Geoffrey Mueller (Genome Integrity and Structural Biology Laboratory) collaborates with scientists at the University of Cartagena, Columbia, to compare the human anti-body response to allergens in different patient populations in North and South

America. This collaboration was supported in part by 1ZIAES103026 and 1ZIAES103206.

- Dr. Masahiko Negishi (Reproductive and Developmental Biology Laboratory) collaborates with scientists at Toyama University, Japan to study phosphorylation of estrogen receptor alpha. This collaboration was supported in part by 1ZIAES080040.
- Dr. Shyamal Peddada (Biostatistics Branch) collaborates with investigators at the Norwegian Institute of Public Health, Oslo, Norway, to study changes in infant gut microflora over time and its association with various health outcomes; with scientists at the University of Haifa, Israel, to develop general methods for analyzing complex multivariate data that are commonly encountered in health sciences; and with scientists at the University of Valladolid, Valladolid, Spain, to develop methods for analyzing angular data such as those obtained from cell-cycle experiments, circadian clock experiments etc. These collaborations were supported in part by 1ZIAES101744 and 1ZIAES103066.
- Dr. Lars Pedersen (Genome Integrity and Structural Biology Laboratory) collaborates with investigators at the French National Institute for Agricultural Research (INRA), Jouy-en-Josas, France, to characterize the Virulence Factor Nuclease A from *Streptococcus agalactiae*. This collaboration was supported in part by 1ZIAES102645.
- Dr. James Putney (Signal Transduction Laboratory) collaborates with scientists at the Oxford University, Oxford, United Kingdom, to investigate the regulation of calcium signaling. This collaboration was supported in part by 1ZIAES090087.
- Dr. Michael Resnick (Genome Integrity and Structural Biology Laboratory) has collaborations with scientists at the Centre for Integrative Biology, University of Trento, Trento, Italy, to study mutations in the tumor suppressor p53; and with scientists in the Department of Biology, Technion, Haifa, Israel to study how sequences targeted by p53 can support transactivation of transcription. These collaborations were supported in part by 1ZIAES065079.
- Dr. Roel M. Schaaper (Genome Integrity and Structural Biology Laboratory) collaborates with investigators at the Institute of Biochemistry and Biophysics, Polish Academy of Sciences, Warsaw, Poland, to study the mechanisms responsible for the differential error rate of leading and lagging strand replication of DNA; with investigators at the Department of Industrial Chemistry, University of Bologna, Bologna, Italy, to study DNA Polymerase III subunit interactions; and with investigators at Wollongong University, Wollongong, Australia, to investigate DNA polymerase proofreading mechanisms. These collaborations were supported in part by 1ZIAES065086.
- Dr. Stephen Shears (Signal Transduction Laboratory) has collaborations with scientists at the Department of Chemistry, University of Zurich, Zurich, Switzerland, to study the signaling molecule bisdiphosphoinositol tetrakisphosphate (1,5-(PP)2-myo-InsP4; and with scientists at the Department of Applied Biological Sciences, Saga University, Saga, Japan, to study the roles of phospholipase C signaling in humoral and cellular immune responses in *Drosophila*. These collaborations were supported in part by 1ZIAES080046.

- Dr. Clarice Weinberg (Chief, Biostatistics Branch) collaborates with scientists at the University of Bergen, Norway, the Medical Birth Registry of Norway and the Department of Epidemiology, Biostatistics and Occupational Health at McGill University in Montreal, CA to investigate possible seasonal effects on pregnancy outcomes, such as preterm birth, fetal growth and preeclampsia. These collaborations were supported in part by 1ZIAES040007 and 1ZIAES040006.
- Dr. Paul Wade (Epigenetics and Stem Cell Biology Laboratory) collaborates with scientists at Waseda University, Tokyo, to investigate structural aspects of centromeric chromatin function. This collaboration was supported in part by 1ZIAES101965.
- Dr. Allen Wilcox (Epidemiology Branch) collaborates with investigators at the University of Bergen in Bergen, Norway; the Norwegian Public Health Institute Oslo, Norway; University of Copenhagen, Copenhagen, Denmark; and Aarhus University, Aarhus, Denmark on the MOBAND Project (“Mothers and Babies in Norway and Denmark”) to investigate the causes of cerebral palsy. This collaboration was supported in part by 1ZIAES044003.
- Dr. Samuel H. Wilson (Genome Integrity and Structural Biology Laboratory) collaborates with scientists at the Karolinska Institute, Stockholm, Sweden, to develop small molecule inhibitors to DNA polymerase beta for use in modulation of responses to oxidative stress; with scientists at the Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russia, to study human AP endonuclease 1 structure-function relationships; with scientists at the Research Reactor Institute, Kyoto University, Kumatori, Japan, on studies of DNA polymerase beta complementation of Aprataxin deficiency in chicken DT40 cells; with investigators at Tohoku University, Sendai, Japan, on the biochemical characterization of a novel chromatin associated DNA repair factor; with scientists at Paris Diderot University, Paris, France, on computational modeling of the base excision repair pathway; and with scientists at INSERN, Paris, France, on X-ray crystallography of DNA polymerase beta in complex with triple helix DNA. These collaborations were supported in part by 1ZIAES050158 and 1ZIAES050159.
- Dr. Rick Woychik (Deputy Director and the Epigenetics and Stem Cell Biology Laboratory) collaborates with scientists at the School of Bioinformatics Engineering, Talca University, Talca, Chile, to develop a new bioinformatics pipeline to broadly and accurately identify repeat fusion transcripts. This collaboration was supported in part by 1ZIAES103187.
- Dr. Darryl Zeldin (Scientific Director and the Immunity, Inflammation & Disease Laboratory) had a collaboration with scientists in the Gene Therapy Center, Tongji Medical Center, Wuhan, Peoples Republic of China to study the roles of Cytochrome P450 CYP2J2 in the heart, ischemia-reperfusion, diabetes, cancer and inflammation; with scientists at the Max Delbrück Centre for Molecular Medicine, Berlin, Germany to study the role of P450-derived eicosanoids and other fatty acid products in cardiac hypertrophy; with scientists at the William Harvey Research Institute, Barts & the London, Queen Mary University of London, Charterhouse Square, London, UK, to study the roles of P450-derived eicosanoids and other fatty acid products on endothelial function; and with scientists at the Pharmacokinetics and Bioanalysis

Center, Shin Nippon Biomedical Laboratories, Ltd., Wakayama, Japan, to study the role of P450-derived eicosanoids in cynomolgus monkeys. These collaborations were supported in part by 1ZIAES025034.

International Meetings Organized

Dr. Masahiko Negishi (Reproductive and Developmental Biology Laboratory) was co-organizer of the 12th International Symposium on Cytochrome P450, in Kyoto (September 2014) and the 19th International Conference of Cytochrome P450, in Tokyo (June, 2015).

Dr. James Putney (Signal Transduction Laboratory) was co-organizer of the International Congress on Cell Membranes and Oxidative Stress Focus on: Calcium Signaling and TRP Channels, Isparta, Turkey, September 8-13, 2014; and served on the Scientific Organizing Committee of the European Calcium Society Meeting, Aix-en-Provence, France, September 14-18, 2014.

Dr. Michael Resnick (Genome Integrity and Structural Biology Laboratory) served on the organizing committee of the International p53 workshop held in Stockholm, Sweden from June 15-19, 2014.

Dr. Samuel H. Wilson (Genome Integrity and Structural Biology Laboratory) was co-chair of the 5th Japan-US/US-Japan DNA Repair Meeting, Naruto, Tokushima, Japan, October 28-31, 2014; and Symposium Co-Organizer of the International Conference on Radiation Research, Kyoto, Japan, to be held in May 2015.

Dr. Darryl Zeldin (Scientific Director and the Immunity, Inflammation & Disease Laboratory) served as a Scientific Program Advisor for the Bioactive Lipids in Cancer, Inflammation and Related Diseases meeting to be held in Budapest in July 2015.

Work with International, Multinational or Regional Foreign Organizations

The NIEHS DIR has Memoranda of Understanding between the American Institute in Taiwan and the Taipei Economic and Cultural Representative Office in the United States as well as between Nanjing Medical University in Nanjing, China and NIEHS to foster training and collaborative research in the areas of environmental health sciences.

Dr. Karen Adelman (Epigenetics and Stem Cell Biology Laboratory) served as a reviewer for the Netherlands Organization for Scientific Research (NWO), The Hague, for their Innovational Research Incentives Scheme VICI Program.

Dr. Matthew Longnecker (Epidemiology Branch) served on the Science Advisory Board of HELIX: The Human Early-Life Exposome – novel tools for integrating early-life environmental exposures and child health across Europe. The project is based at CREAL: Centre de Recerca en Epidemiologia Ambiental, Barcelona, Spain.

Dr. Fred Miller (Clinical Research Program) is a member of The International Myositis Genetics Consortium (MYOGEN) to define genetic risk and protective factors for myositis; is a member of The International Myositis Assessment and Clinical Study Group to standardize the conduct and reporting of myositis clinical studies; is a member of The International Myositis Classification Criteria Project to develop new classification criteria for myositis and its subgroups; and is a member of The Pan-American League of Associations for Rheumatology (PANLAR) Myositis Consortium to study the ethnogeographic variations in risk factors and pathogenesis of myositis in the Americas. This work is supported in part by 1ZIAES101074 and 1ZIAES101081.

Dr. Lisa Rider (Clinical Research Program) is a member of The International Myositis Genetics Consortium (MYOGEN) to define genetic risk and protective factors for myositis; is a member of The International Myositis Assessment and Clinical Study Group to standardize the conduct and reporting of myositis clinical studies; and is a member of The International Myositis Classification Criteria Project to develop new classification criteria for myositis and its subgroups. This work is supported in part by 1ZIAES101074 and 1ZIAES101081.

Dr. Samuel H. Wilson (Genome Integrity and Structural Biology Laboratory) served on the Scientific Advisory Board, FAMRI Medical Research Institute, Weizmann Institute of Science, Rehovot, Israel.

Hosted of Foreign Delegation to the US

Dr. Stephanie London (Epidemiology Branch) hosted delegations of scientists from Norway, Thailand and China.

Dr. Masahiko Negishi (Reproductive and Developmental Biology Laboratory) hosted a delegation of Pharmacology Doctoral students from Hiroshima Kokusai University, Japan (March 2015).