

# **Division of Intramural Research**

## **NAEHS Council Update**

**May, 2016**

## **DIR RECRUITMENTS**

### **Deputy Scientific Director**

The National Institute of Environmental Health Sciences (NIEHS) is seeking an accomplished scientist to serve as the Deputy Scientific Director of our Division of Intramural Research (DIR). This is an exciting leadership opportunity to provide scientific oversight and help set the research agenda for the DIR. This individual will lead a team that is directly focused on intramural scientific research. Responsibilities include strategic planning and management, faculty evaluation, recruitment of scientific peer reviewers and oversight of review panels for intramural scientists, training within the DIR, coordination of research activities funded by non-NIEHS entities, development and/or recommendation of research policies, priorities, and procedures, and communication with other federal entities including other NIH Institutes and external organizations. The successful candidate will work closely with the Scientific Director to manage all scientific aspects of the DIR. Dr. Thomas Kunkel, Genome Integrity & Structural Biology Laboratory, is chair of the Search Committee.

### **Investigator in Epidemiology**

The National Institute of Environmental Health Sciences is recruiting for a full-time Tenure-Track Epidemiologist. The successful candidate 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.

## **NEW HIRES AND CHANGES IN DIR LEADERSHIP**

### **Stadtman Investigator in Epidemiology**

Dr. Chandra L. Jackson from Epidemiology Department, Harvard T.H. Chan School of Public Health and the Population Health Research Program, Harvard Catalyst, Harvard Medical School has accepted a position as a Tenure-Track Stadtman Investigator in the Epidemiology Branch at NIEHS and will have a joint appointment at the National Institute on Minority and Health Disparities (NIMDH). Dr. Jackson studies dietary and lifestyle factors as major modifiable contributors to racial, ethnic and socioeconomic health disparities in chronic diseases related to the cardiovascular system. She is expected to arrive in August 2016.

### **Director of the Center for Integrated Bioinformatics**

Dr. Jian-Liang (Jason) Li, Associate Director, Applied Bioinformatics Core, Sanford Burnham Prebys Medical Discovery Institute, Lake Nona, Orlando, FL, has accepted a position as Director of the Center for Integrated Bioinformatics in the Epigenetics and Stem Cell Biology Laboratory at NIEHS. He is expected to arrive in the Fall 2016.

## **SCIENTIFIC UPDATE BY DIR PRINCIPAL INVESTIGATOR**

### **Why Not to Look Under the Lamppost?**

**Raja Jothi, Ph.D.**  
**Systems Biology Group**  
**Epigenetics & Stem Cell Biology Laboratory**  
**DIR, NIEHS**

The long-term goal of the Systems Biology Group is to understand how transcription regulators and epigenetic modifications regulate gene expression programs controlling key cell fate decisions during cellular development, differentiation, and pathogenesis. To this end, we use integrative interdisciplinary approaches—merging systems biology, functional genomics, and biochemistry—to reconstruct and characterize developmentally- and environmentally-responsive gene networks in embryonic stem (ESCs). Research within the group is largely data-driven, through computational analyses of published and in-house-generated high-throughput genomic and proteomic datasets, with the goal of generating testable hypotheses. The laboratory component provides the means to not only test some of the hypotheses that come out of computational analyses but also to perform traditional biochemical experiments to gain mechanistic insights. Over the years, we have not only shed light on many genes and pathways with previously unknown roles in ESC biology but also help connect the dots on gene networks controlling the pluripotent state. Our ongoing studies on signaling networks will build on these findings and contribute to the comprehensive understanding of how signaling cascades instruct epigenetic and/or transcriptional programs controlling cell fate decisions. Collectively, our studies will provide a foundation for defining the mechanism and scope of developmentally- and environmentally-responsive gene networks for a better understanding of how ESCs can be used as effective model systems for regenerative medicine, disease modeling, and toxicity/drug testing.

## **BSC REVIEW OF THE NEUROBIOLOGY LABORATORY & DR. DOUGLAS A. BELL**

The NIEHS DIR Board of Scientific Counselors reviewed Neurobiology Laboratory & Dr. Douglas A. Bell April 17-19, 2016.

Members of the Board of Scientific Counselors that Attended:

- Kenneth B. Adler, Ph.D., [BSC Chair], Professor, Dept. of Molecular Biomedical Sciences, College of Veterinary Medicine, North Carolina State University, Raleigh, NC
- Christopher I. Amos, Ph.D., Professor, Dept. of Community and Family Medicine, Geisel School of Medicine at Dartmouth, Hanover, NH
- Juan C. Celedón, M.D., Dr.P.H., Niels K. Jerne Professor of Pediatrics, Dept. of Pediatrics, Children's Hospital of Pittsburgh of UPMC, University of Pittsburgh, Pittsburgh, PA
- Monica J. Justice, Ph.D., Head and Senior Scientist, Genetics & Genome Biology Program, Genetics & Genome Biology Program, SickKids Research Institute, The Peter Gilgan Centre for Research and Learning, Toronto, Canada
- Carol A. Lange, Ph.D., Professor, Departments of Medicine and Pharmacology, University of Minnesota, Minneapolis MN
- Donald P. McDonnell, Ph.D., Glaxo-Wellcome Professor and Chairman of Pharmacology and Cancer Biology, Duke University School of Medicine, Durham, NC
- Ann M. Reed, M.D., Professor and Chair, Department of Pediatrics, Physician-in-Chief, Duke Children's Hospital, Duke University Medical Center, Durham, NC
- Ivan Rusyn, M.D., Ph.D., Professor, Department of Veterinary Integrative Biosciences, Texas A&M University College of Veterinary Medicine & Biomedical Sciences, College Station, TX
- Daniel O. Stram, Ph.D., Professor, Division of Biostatistics and Genetic Epidemiology, Department of Preventive Medicine, University of Southern California Keck School of Medicine, Los Angeles, CA
- Karen M. Vasquez, Ph.D., Professor, Division of Pharmacology and Toxicology, Dell Pediatric Research Institute, The University of Texas at Austin, Austin, TX
- Roland A. Owens, Ph.D., Ex-Officio BSC Member, Assistant Director, Office of Intramural Research, NIH, Bethesda, MD, via phone

Ad Hoc Reviewers that Attended:

- Cristina Alberini, Ph.D., Professor, NYU Center for Neural Science, New York, New York
- Michelle Basso, Ph.D., Professor, Semel Institute for Neuroscience and Human Behavior Brain Research Institute, UCLA, Los Angeles, CA
- Jeffrey S. Diamond, Ph.D., Senior Investigator, Synaptic Physiology Section, NINDS, Porter Neuroscience Research Center, Bethesda, MD
- Dr. Karl Kelsey, M.D., M.O.H., Director, Center for Environmental Health and Technology, Brown University, Providence, RI
- Dr. Michael Levine, Ph.D., Professor, Psychiatry & Biobehavioral Sciences, Associate Director for Education, Brain Research Institute, UCLA, Los Angeles, CA

- Dr. Daniel McGehee, Ph.D., Department of Anesthesia and Critical Care, Chicago, IL
- Gary Miller, Ph.D., Professor and Associate Dean for Research, Rollins School of Public Health, Atlanta GA
- Karoly Mirnics, M.D., Ph.D., Associate Director Kennedy Center Vice Chair for Research, Department of Psychiatry James G. Blakemore Chair in Psychiatry Professor of Psychiatry, Vanderbilt University School of Medicine, Nashville, TN
- Dr. Patrick Sinn, Ph.D., Director, University of Iowa Viral Vector Core Research Associate Professor of Pediatrics, University of Iowa Carver College of Medicine, Iowa City, IA
- Dr. Scott Thompson, Ph.D., Professor and Chair, Department of Physiology, University of Maryland School of Medicine, Baltimore, MD
- Dr. Robert C. Smart, Ph.D. William Neal Reynolds Distinguished Professor Director, Center for Human Health and the Environment North Carolina State University, Raleigh, NC
- Dr. Paula M. Vertino, Ph.D. Professor of Radiation Oncology Leader, Cancer Genetics and Epigenetics Research Program Winship Cancer Institute Emory University School of Medicine, Atlanta, GA
- Dr. Laszlo Zaborsky, M.D., Ph.D., D.Sc. Distinguished Professor of Neuroscience Center for Molecular and Behavioral Neuroscience Rutgers University/Newark, Newark, NJ

Agenda:

Sunday, April 17 – Doubletree by Hilton

Closed Evening Session

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|------------------|---|
| 7:00 – 8:00 p.m. | Welcome and Discussion of Past Board Reviews, Drs. Linda Birnbaum, Darryl Zeldin, Jerry Yakel and Bill Copeland |
| 8:00 – end       | BSC Discussion Review, Dr. Ken Adler and panel  |

Monday, April 18 - NIEHS Rodbell Conference Rooms 101 ABC

Morning Session

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|------------------|--|
| 8:30 – 8:45 a.m. | Welcome, Dr. Linda Birnbaum                                  |
| 8:45 – 9:05      | Overview, Neurobiology Laboratory, Jerry Yakel, Ph.D.        |
| 9:05 – 9:55      | Ion Channel Physiology Group, Jerry Yakel, Ph.D.             |
| 9:55 - 10:10     | COFFEE BREAK   |
| 10:10 – 11:00    | Developmental Neurobiology Group, Patricia Jensen, Ph.D.     |
| 11:00 – 11:30    | Closed 1:1 Sessions with Investigators, Drs. Yakel & Jensen. |
| 11:30 – 1:00     | Closed BSC Working Lunch                                     |

Afternoon Session

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|----------------|--|
| 1:30 – 2:30 pm | Poster Session—NL and Dr. Bell/GISBL Fellows and Staff Scientists, Rodbell Lobby |
| 2:30 – 3:15    | Closed Sessions with Fellows and Staff Scientists                                |
| 3:15 – 3:30    | COFFEE BREAK   |
| 3:30 – 4:20    | In Vivo Neurobiology Group, Cuohong Cui, M.D., Ph.D.                             |
| 4:20 – 5:10    | Environmental Genomics Group, Douglas Bell, Ph.D.                                |
| 5:10 – 5:40    | Closed 1:1 Sessions with Investigators, Drs. Cui & Bell                          |
| 5:40           | Return to Doubletree Hotel   |

Closed Evening Session

6:15 – end BSC Discussion and completion of individual review assignments  
by each member, All BSC reviewers at hotel

Tuesday April 18- NIEHS Rodbell Conference Rooms 101 ABC

Morning Session

8:30 – 9:20 am Synaptic and Developmental Plasticity Group, Serena M. Dudek,  
Ph.D.  
9:20 – 9:50 Closed 1:1 Sessions with Investigators, Drs. Dudek & Viral Vector  
Core  
9:50 – 10:05 COFFEE BREAK  
10:05 – 11:15 BSC Discussion and completion of individual review assignments  
by each member  
11:15 – 1:00 Closed Lunch Session and Debriefing to NIEHS/DIR Leadership,  
101ABC  
1:00 Adjourn

## TRAINING AND MENTORING

### 2016 NIEHS Biomedical Career Symposium

The Nineteenth Annual NIEHS Biomedical Career Symposium was held Friday, April 29, 2016 at the Environmental Protection Agency Campus, Research Triangle Park, NC. The keynote address entitled "Beyond the End of the Road: Career Advice From the Wilderness" was delivered by Keith Micoli, Ph.D., Director of the New York University School of Medicine Postdoctoral Program and Co-Primary Investigator on a pioneering NIH Broadening Experiences in Scientific Training (BEST). Areas covered in the Symposium included: Career Specific Discussion; Career Development Workshops; Networking Opportunities; and One-on-One CV/Resume Consultations with Professionals from Academia, Industry and Government.

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:

- Aleksandra Adomas, Ph.D., Medical Writer, MicroMass Communications
- Hollie Altice, Human Resources Manager, MedThink Communications
- Sibby Anderson-Thompkins, Ph.D., Director, Office of Postdoctoral Affairs, University of North Carolina
- Uzma Atif, M.P.H., Ph.D., Senior Medical Science Liason, Shire Pharmaceuticals
- Leigh Babaian, M.Ed., Early Talent Senior Recruiter, Quintiles
- William Blackmon, PMP, CSM, BSEE, CEO, Founder and CEO, Apogee Social Media Group
- Melissa Bostrom, Ph.D., Assistant Dean for Graduate Student Professional Development, The Graduate School, Duke University
- Patrick Brandt, M.S., Ph.D., Director of Career Development and Training, University of North Carolina
- Maureen Bunger, Ph.D., Technical Director, TRL, LLC. Founder and Principal, ModernTox, LLC.
- Paul J. Burke III, Human Resources Associate, KBI Biopharma, Inc.
- Nisha Cavanaugh, Ph.D., Manager of Postdoctoral and Academic Programs, Sanford Burnham Prebys Medical Discovery Institute
- Kelly Rae Chi, M.A., M.S., Freelance Science and Technology Writer
- Tammy Collins, Ph.D., Director, Office of Fellows' Career Development, National Institute of Environmental Health Sciences, National Institutes of Health
- Lori Conlan, Ph.D., Director, Office of Postdoctoral Services, National Institutes of Health
- Caren Cooper, Ph.D., Assistant Director of the Biodiversity Research Lab, North Carolina Museum of Natural Sciences
- Carolyn Couch, M.A., Principal Career Coach, The Next Step Career Coaching LLC
- Lisa Crose, Ph.D., Research Scientist, Camargo Pharmaceutical Services
- Lori Davis, M.S., Ph.D., RAC, Senior Clinical Research Scientist, Impact Pharmaceutical Services



- Kevin Day, Ph.D., Director of Laboratory Operations, Sequenom
- Laura Demarse, Ed.D, NCC, MCC, Director, Office of Postdoctoral Affairs, North Carolina State University
- Anne Deschamps, Ph.D., Senior Science Policy Analyst, Federation of American Societies for Experimental Biology
- Kenneth Elstein, M.B.A., Organizational Development Specialist, US Environmental Protection Agency
- Stephanie Engel, Ph.D., Associate Professor, Epidemiology, University of North Carolina
- Heather Franco, Ph.D., Proposal Developer, Quintiles
- George Fromm, M.B.A., Ph.D., Senior Director of Research and Development, Heat Biologics, Inc.
- Rebecca Fry, Ph.D., Associate Professor, Environmental Sciences and Engineering, Gillings School of Global Public Health, University of North Carolina
- Laura Glasscock, Ph.D., Associate Professor, Biology, Winthrop University
- Christy Goudy, Talent Acquisition Manager, MedThink Communications
- Andrew Hagarman, Ph.D., Project Leader/Scientist II, KBI Biopharma, Inc.
- Brian Hawkins, Ph.D., Research Biologist, RTI International
- Jerry Heindel, Ph.D., Scientific Program Administrator, Division of Extramural Research and Training, National Institute of Environmental Health Sciences
- Erin Hopper, Ph.D., Research Director, Office of Research, University of North Carolina General Administration, University of North Carolina
- Brian Ingram, Ph.D., Study Director, Metabolon
- Jacqueline Kinyamu-Akunda, D.V.M., Ph.D., Director, Pre-Clinical Safety – Oncology, Novartis
- Carol Kwiatkowski, Ph.D., Executive Director, The Endocrine Disruption Exchange
- Susan Lankford, Ph.D., Program Analyst, Science and Technology Development, North Carolina Biotechnology Center
- Rebekah Layton, Ph.D., Director, Career Training Initiatives in Biological and Biomedical Sciences, Assistant Director of Professional Development, University of North Carolina
- Melanie Lee-Brown, Ph.D., Associate Professor, Biology, Director of Research and Creative Endeavors, Guilford College
- Kellen Meadows, M.P.H., Ph.D., RRT, Oncology Field Medical Director, Pfizer
- Keith Micoli, Ph.D., Postdoctoral Program Director, New York University School of Medicine
- Sharon Milgram, Ph.D., Director, Office of Intramural Training and Education, National Institutes of Health
- Heather Miller, Ph.D., Assistant Professor, Biochemistry, High Point University
- Jenny Noonan, M.P.A., Director, Policy Analysis and Communications, US Environmental Protection Agency
- Denice Norton, B.A.Sc., Human Resources Coordinator, Pfizer
- Thomas O’Connell, Ph.D., Director of Research Collaborations, Duke Molecular Physiology Institute
- Kevin Ramkissoon, Ph.D., Science Policy Analyst, National Institutes of Health

- Mahendra Rao, M.D., Ph.D., Vice President of Strategic Affairs, Q therapeutics, Adjunct Faculty Member, Wake Forest Institute for Regenerative Medicine
- Amy Rawls, Ph.D., PHR, HR Director, Research Square
- David Reiff, Ph.D., Associate Professor, Biological Sciences, North Carolina State University
- Kathryn Remington, Ph.D., Principal Scientist, BioReliance
- Jennifer Richmond-Bryant, Ph.D., Senior Physical Scientist, National Center for Environmental Assessment, US Environmental Protection Agency
- Luke Roode, Ph.D., Medical Writer, Quintiles
- Denise Saunders, Ph.D., Career Counselor, Office of Intramural Training and Education, National Institutes of Health
- Stacy Schnieber, M.A., Director of Human Resources, Camargo Pharmaceutical Services
- Molly Starback, M.S.L.S., Director, Office of Postdoctoral Services, Duke University
- Beth Sullivan, Ph.D., Associate Professor, Molecular Genetics and Microbiology, Duke University
- Richard Watkins, Ph.D., CEO and Founder, The Science Policy Action Network, Inc., Program Coordinator, Chancellor's Science Scholars Program, University of North Carolina
- Dara Wilson-Grant, M.S.Ed., NCC, LPCA, Associate Director and Career Counselor, Office of Postdoctoral Affairs, University of North Carolina, Owner and Consultant, Careers in Bloom
- Deb Wojcik, Ph.D., Director, Career and Professional Development Center, Nicholas School of the Environment, Duke University

## INTERNATIONAL ACTIVITIES IN DIR FOR FY 2015

### Collaborative Research Projects

- Dr. David Armstrong (Neurobiology Laboratory) collaborates with scientists at Duisberg-Essen University in Germany, to investigate the signaling mechanisms by which thyroid hormone receptor  $\beta$  regulates lipid metabolism. This collaboration was supported in part by 1ZIAES102285.
- 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, at the Vall d'Hebron University Hospital, Oncology Department, Passeig de la Vall D'Hebron, Barcelona, Spain, and at the Department of Computer and Information Science and Department of Cancer Research and Molecular Medicine, Norwegian, University of Science and Technology, Trondheim, Norway and at the Department of Biology, University of Pisa, Via Derna, Pisa, Italy, 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. William Copeland (Chief, Genome Integrity and Structural Biology Laboratory) collaborates with investigators at Centre de génétique humaine, Université de Franche-Comté, Besançon, France; Metabolic Unit, Centre of Human Genetics, University Hospital, Liège, Belgium; Department of Pediatrics, Division of Child Neurology & Metabolism, Ghent University Hospital, Belgium; Wellcome Trust Centre for Mitochondrial Research, Institute of Neuroscience, Newcastle University, Newcastle upon Tyne, UK; Inserm U 1127, CNRS UMR 7225, Sorbonne Universités, UPMC Univ Paris 06 UMR S\_1127, Institut du Cerveau et de la Moelle épinière, ICM, F-75013 Paris, France; Department of Neurology, Sambre and Meuse Regional Hospital, Namur, Belgium; Born-Bunge Foundation, University of Antwerp, Belgium; Laboratory of Clinical Neurophysiology, Université Catholique de Louvain (UCL), Brussels, Belgium; Department of Neurology, University of Rostock, Rostock, Germany; Université catholique de Louvain, CHU UCL Namur, Department of Neurology, B5530 Yvoir, Belgium, and Institute of Neuroscience (IoNS), (UCL), B1200 Brussels, Belgium; and Ecole Pratique des Hautes Etudes, héSam Université, Laboratoire de neurogénétique, CHU Pitié-Salpêtrière, F-75013,

Paris, France, to investigate the consequence and mechanism of mitochondria disease from specific POLG2 gene mutations. These collaborations are supported in part by 1ZIAES065078.

- Dr. Stavros Garantizotis (Acting Clinical Director and the Immunity, Inflammation and Disease Laboratory) collaborates with investigators at the University of Rome Campus Bio-medico, Rome, Italy, to study the clinical utility of inhaled hyaluronan in acute exacerbations of COPD. 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 and the Chinese PLA General Hospital, 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; and 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. 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; and with scientists at the University of Tsukuba, TARA Center, Tsukuba, Japan to investigate the role of *Nrf2* in susceptibility to oxidant-induced lung injury. These collaborations were supported in part by 1ZIAES100557 and 1ZIAES100513.
- 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; and with scientists at the University of Sussex, Brighton, UK to study DNA replication in fission yeast. These collaborations were supported in part by 1ZIAES065070 and 1ZIAES065089.
- 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. Jennifer Martinez (Immunity, Inflammation and Diseases Laboratory) collaborates with scientists at the Division of Nephrology and Hypertension, Christian-Albrechts-University, Kiel, Germany, to the requirement for LC3-associated phagocytosis in the prevention of lupus-like disease and autoinflammation; and with scientists at the University of Edinburgh, Edinburgh, UK, to study the mechanisms of engulfment of apoptotic cells in human SLE patients. These collaborations are supported in part by 1ZIAES103286.

Dr. Geoffrey Mueller (Genome Integrity and Structural Biology Laboratory) collaborates with scientists at the University of Cartagena, Columbia, to compare the human antibody response to allergens in different patient populations in North and South America. This collaboration was supported in part by 1ZIAES103026 and 1ZIAES103206.

Dr. Shyamal Peddada (Acting Branch Chief, Biostatistics and Computational Biology 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. 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 interactions of p53 with the ETS transcription factor family involved in hematopoietic development and oncogenesis; with scientists in the Department of Biology, Technion, Haifa, Israel to study how sequences targeted by p53 can support transactivation of transcription; and with scientists at the Ludwig Institute for Cancer Research, Oxford University, Oxford, England, to study the influence of p53 on expression of the TLR innate immune gene family. 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 and 1ZIAES101905.

Dr. Stephen Shears (Signal Transduction Laboratory) has collaborations with scientists at the Department of Bioorganic Chemistry, Institute of Organic Chemistry, Albert-Ludwigs-University, Freiburg, Germany) to characterize a novel enzyme activity that regulates how cells defend against environmental pathogens; with scientists at the Department of Pharmacy and Pharmacology, University of Bath, United Kingdom to synthesize and characterize a metabolically stable analogue of “IP8”; and with scientists at Emerging Infectious Diseases, Duke-NUS Graduate Medical School, National University of Singapore to study the molecular mechanism that regulates nuclear localization of a cell-signaling enzyme PPIP5K. These collaborations were supported in part by 1ZIAES080046.

Dr. Clarice Weinberg (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 of the interaction of the transcription factor GATA3 with nucleosomal DNA. This collaboration was supported in part by 1ZIAES101965.

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 William Harvey Research Institute, 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; with scientists at University College London, London, UK, to examine the role of eicosanoids in pulmonary inflammation in young and aged human populations; with scientists at the Royal Veterinary College, London, to study the role of fatty acid epoxides in resolution of inflammation; 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 the liver and intestine. These collaborations were supported in part by 1ZIAES025034.

### **International Meetings Organized**

Dr. William Copeland (Chief, Genome Integrity and Structural Biology Laboratory) is on the organizing committee for the United Mitochondrial Disease Foundation's annual meeting, which hosts an international meeting every June on Mitochondrial Medicine and Disease.

Dr. Lisa Rider (Clinical Research Program) was a co-organizer of the 213rd European Neuromuscular Centre International workshop: Outcome measures and clinical trial readiness in idiopathic inflammatory myopathies. 18-20 September 2015, Heemskerk, The Netherlands.

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 held in Budapest in July 2015; and on the Organizing Committee for the 16<sup>th</sup> International Winter Eicosanoid Conference.

### **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. 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. James Putney (Signal Transduction Laboratory) serves on the Governing Board of the European Calcium Society.

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.

### **International Capacity Building**

Dr. Kenneth Korach (Chief, Reproductive and Developmental Biology Laboratory) gave a group of course lectures for the University of Hong Kong in reproductive and developmental toxicology.