

Division of Intramural Research

NAEHS Council Update

June 2022

DIR RECRUITMENTS

Tenure Track/Eligible Investigator in the Biostatistics and Computational Biology Branch

The National Institute of Environmental Health Sciences (NIEHS), a major research component of the National Institutes of Health (NIH) and the Department of Health and Human Services, is inviting applications for a Tenure-Track or Tenure-Eligible Investigator in the Biostatistics and Computational Biology Branch (BCBB) within the Division of Intramural Research at the NIEHS in Research Triangle Park, NC. Successful applicants will have a Ph.D., M.D. or an equivalent doctoral degree, with training in statistics, biostatistics, or related quantitative discipline, and demonstrated ability to design and carry out original and innovative research. The individual selected for this position will have a strong record of accomplishments in the field of biostatistics. Preference will be given to candidates who specialize in methods for observational and epidemiological data, develop and apply machine learning methods, and/or develop methods for high dimensional and sparse data to enhance our understanding of the effects of the environment on human health. Example application areas include but are not limited to epidemiological and health record data, genetics/genomics, metabolomics, and microbiome studies. This person will be expected to develop an outstanding independent research program that complements other research programs within the BCBB, and the Division of Intramural Research at NIEHS, and is consistent with the mission of the NIEHS and NIH. Dr. Jack Taylor, Senior Investigator in the Epidemiology Branch serves as chair of the search committee which was launched on November 16, 2021.

Medical Director of the Clinical Research Unit

The Division of Intramural Research is seeking an accomplished physician scientist to serve as Senior Clinician in the Clinical Research Branch and Medical Director of the Clinical Research Unit (CRU), a stand-alone facility that sees over 1,000 patients and research participants annually with a budget of over \$3M. The CRU not only serves as the research home for experienced clinical investigators, but also as a resource for the outstanding intramural scientists at NIEHS interested in the translational applicability of their work. The Clinical Research Branch is interested in candidates with expertise in areas such as endocrinology, neuroendocrinology, metabolism, exercise, sleep, immune-mediated diseases, pulmonology, and human genetics, among others. Applicants should have an M.D. or equivalent doctoral degree with an outstanding track record in conducting and publishing clinical research. Dr. Michael Fessler, Chief of the Immunity, Inflammation and Disease Laboratory serves as chair of the search committee which was launched on May 25, 2021.

Deputy Chief of the Comparative Medicine Branch

The National Institute of Environmental Health Sciences (NIEHS) of the National Institutes of Health is searching for a Deputy Chief /Deputy Animal Program Director of the Comparative Medicine Branch (CMB). Minimum qualifications include a DVM/VMD from an AVMA-accredited or approved college or university, a current license to practice veterinary medicine in any state in the United States and board certification by the American College of Laboratory Animal Medicine. CMB provides a broad range of services and collaborative support for NIEHS intramural research programs by providing training for investigators and technicians, post-approval compliance monitoring, quality assurance support for research projects, consultation with investigators planning animal research projects, and administrative and professional staffing for

the Institutional Animal Care and Use Committee (ACUC). CMB also plans and conducts independent research in support of animal care, use and welfare advancement. CMB participates in the training of residents in an ACLAM approved laboratory animal medicine training program. The Deputy Chief 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 have a strong emphasis on rodent animal models. CMB is responsible for management of the NIEHS animal care and use program, which includes facility management, animal procurement and housing, animal health surveillance and disease diagnosis, clinical veterinary services, rodent breeding, technical and surgical assistance, animal imaging, behavioral phenotyping, quality assurance of materials used in animal-based research and animal food, bedding, and water, and professional advice to the institute on animal related issues. The NIEHS Animal Care and Use Program is fully accredited by AAALAC, International. CMB supports approximately 120 active animal research projects for scientists in the Division of Intramural Research. A daily inventory of over 40,000 rodents is maintained. The Deputy Chief will have supervisory responsibility of section heads within CMB and will serve on the NIEHS ACUC as well as other committees as directed by the Chief, CMB. Dr. Paul Wade, Senior Investigator in the Epigenetics and Stem Cell Biology Laboratory and Chair of the NIEHS Animal Care and Use Committee serves as Chair of the search committee which was launched on January 20, 2022.

Chief of the Epigenetics and Stem Cell Biology Laboratory

The National Institute of Environmental Health Sciences (NIEHS), part of the National Institutes of Health (NIH), is searching for a highly qualified, established investigator for the position of Chief of the Epigenetics and Stem Cell Biology Laboratory (ESCBL) within the Division of Intramural Research (DIR). In addition to directing his/her independent research program, the Chief will have responsibility for leading ESCBL in new directions as research in environmental health science continually evolves. Applicants should have a Ph.D., M.D., or equivalent doctoral degree and a strong interest and publication record in mammalian cell biology and signal transduction. Dr. Anton Jetten, Senior Investigator and Deputy Chief of the Immunity, Inflammation and Disease Laboratory will serve as chair of the search committee which will launch in June 2022.

Recruitment of NIH Earl Stadtman Investigator Finalists

In addition to targeted recruitment, DIR continue to seek outstanding scientists through the central NIH Stadtman recruitment mechanism. Six outstanding candidates from the 2021-2022 Stadtman search representing a range of disciplines central to the NIEHS mission were interviewed during December 2021 through February 2022. Due to the COVID-19 pandemic, the initial interviews were conducted virtually, and two candidates were invited for on-site interviews. No offers were extended at this time due to budget uncertainty.

DIR STAFF UPDATES

New Tenure-Track Investigators

Dr. Stavros Garantziotis, Medical Director of the NIEHS Clinical Research Unit and head of the Matrix Biology Group, has accepted an offer to join the Immunity, Inflammation and Disease Laboratory as a Tenure Track Investigator. Dr. Garantziotis will continue and expand his independent research program focused on extracellular matrix biology, innate immunity, lung inflammatory diseases, and airway remodeling triggered by the environment. He is expected to start as a Tenure Track Investigator in Winter 2022.

New Independent Research Scholars

Dr. Mary Diaz Santana is currently an IRTA Postdoctoral Fellow in the Biostatistics and Computational Biology Branch (BCBB) at NIEHS. Dr. Santana was selected as an NIH Independent Research Scholar (IRS) and is scheduled to start her independent program at NIEHS in August 2022. Dr. Clarice Weinberg will serve as her primary mentor in BCBB. Her independent research program will focus on breast cancer risk prediction modeling, incorporating aspects of the social environment, with the goal of reducing breast cancer incidence and mortality in Hispanic women.

Dr. Francisco (Alex) Montiel Ishino is currently an IRTA Postdoctoral Fellow in NIMHD. Dr. Ishino was selected as an NIH Independent Research Scholar (IRS) and will be joining the Epidemiology Branch at NIEHS in August 2022. His primary mentor in EB will be Dr. Chandra Jackson. His independent research program will seek to determine social environmental risk factors associated with cardiometabolic health in a US Bhutanese cohort.

SCIENTIFIC UPDATE BY A DIR PRINCIPAL INVESTIGATOR

CRAC Calcium Channels: A New Therapeutic for Environment-Based Disease

Anant Parekh, D. Phil., Chief
Calcium Signaling in Health and Disease Group
Signal Transduction Laboratory
DIR, NIEHS

A rise in cytosolic Ca^{2+} is used as a key intracellular messenger in virtually every cell throughout the phylogenetic tree. The rise in Ca^{2+} activates a remarkable range of physiological responses, from the heartbeat and neurotransmission to cell growth and proliferation and even cell death. Aberrant cytosolic Ca^{2+} is linked to a growing list of human disorders including cardiovascular disease, neurodegeneration and various cancers. Targeting proteins that control Ca^{2+} is proving an effective strategy in treating these diseases. One such protein is the Ca^{2+} Release-Activated Ca^{2+} (CRAC) channel that is expressed in the cell surface membrane.

CRAC channels are a major route for raising cytosolic Ca^{2+} in eukaryotic cells. These channels are robustly expressed in immune cells, where they are indispensable for proper functioning of the immune system. Loss-of-function and gain-of-function mutants have revealed important roles for the channel in numerous human diseases, making the channel a clinically relevant target. In this talk, I will briefly summarize why cytosolic Ca^{2+} is important and then describe the role of CRAC channels in air-borne allergen-induced asthma as well as the skin disease psoriasis. I will also discuss briefly efforts to develop selective CRAC channel blockers for therapeutic use.

BSC REVIEW OF THE GENOME INTEGRITY AND STRUCTURAL BIOLOGY LABORATORY

The NIEHS DIR Board of Scientific Counselors reviewed the Genome Integrity and Structural Biology Laboratory on April 25-26, 2022

Members of the Board of Scientific Counselors that Attended:

- Deanna Kroetz, Ph.D., Acting BSC Chair, Professor, Department of Bioengineering and Therapeutic Sciences, University of California, San Francisco School of Pharmacy, San Francisco, CA
- Anita H. Corbett, Ph.D., Samuel C. Dobbs Professor of Genetics, Cell and Developmental Biology, Emory University, Atlanta, GA
- Sylvie Doublé, Ph.D., Professor, Department of Microbiology and Molecular Genetics, University of Vermont, Burlington, VT
- Sarah K. England, Ph. D., Professor, Department of Obstetrics and Gynecology at the Washington University School of Medicine, St. Louis, MO
- Jeffrey J. Hayes, Ph.D., Professor and Chair, Department of Biochemistry and Biophysics, Shohei Koide Professor in Biochemistry and Biophysics, University of Rochester School of Medicine, Rochester, NY
- Frances M. Leslie, Ph.D., Professor Emerita, Department of Pharmaceutical Sciences, School of Pharmacy, University of California, Irvine, CA
- Jose A. Luchsinger, M.D., Professor of Medicine and Epidemiology and Vice-Chair for Clinical & Epidemiologic Research, Columbia University, New York, NY
- Roland A. Owens, Ph.D., Ex-Officio BSC Member, Assistant Director, Office of Intramural Research, NIH, Bethesda, MD

Ad Hoc Reviewers that Attended:

- Kristin Eckert, Ph.D., Professor, Department of Pathology and Laboratory Medicine and Biochemistry & Molecular Biology, Penn State Cancer Institute, Hershey, PA
- Dominic Esposito, Ph.D., Director, Protein Expression Laboratory, Frederick National Laboratory for Cancer Research, National Cancer Institute, Frederick, MD
- Kevin H. Gardner, Ph.D., Director, Structural Biology Initiative, CUNY Advanced Science Research Center and Einstein Professor of Chemistry and Biochemistry, City College of New York, New York, NY
- Andrew J. Fisher, Ph.D., Professor, Department of Chemistry and Department of Molecular and Cellular Biology, University of California, Davis, CA
- Thomas Hollis, Ph.D., Professor, Department of Biochemistry and Center for Structural Biology, Wake Forest School of Medicine, Winston-Salem, NC
- Sue Jinks-Robertson, Ph.D., James B. Duke Distinguished Professor of Molecular Genetics and Microbiology and Director, Cell and Molecular Biology, Duke University School of Medicine, Durham, NC
- Brett A. Kaufman, Ph.D., Associate Professor of Medicine, Division of Cardiology and Associate Professor of Bioengineering, University of Pittsburgh, PA

- Mark R. Kelley, Ph.D., Betty and Earl Herr Professor in Pediatric Oncology Research, Departments of Pediatrics, Biochemistry and Molecular Biology, Pharmacology and Toxicology, Indiana University School of Medicine, Indianapolis, IN
- Susan M. Lea, D. Phil. F. Med. Sci., Chief, Center for Structural Biology and Senior Investigator, National Cancer Institute, Frederick, MD
- Susan Lovett, Ph.D. Abraham S. And Gertrude Burg Professor of Microbiology, Department of Biology, Rosenstiel Basic Medical Sciences, Brandeis University, Waltham, MA
- Kelley Moremen, Ph.D., Distinguished Research Professor, Complex Carbohydrate Research Center, Department of Biochemistry & Molecular Biology, University of Georgia, Athens, GA
- Melanie Ohi, Ph.D., Professor, Cell and Developmental Biology, University of Michigan Medical School, Ann Arbor, MI
- Matthew Perzanowski, Ph.D., Associate Professor of Environmental Health Sciences, Columbia University Mailman School of Public Health, New York, NY
- Celeste Sagui, Ph.D., Professor, Department of Physics, North Carolina State University, Raleigh, NC
- Stewart Shuman, M.D., Ph.D., Professor, Virology, Biochemistry, Structural Biology, and Genetics, Molecular Biology Program, Memorial Sloan Kettering Cancer Center, New York, NY
- Susan E. Tsutakawa, Ph.D., Interim Department Head, Molecular Biophysics and Integrated Bioimaging, Lawrence Berkeley National Laboratory, Berkeley, CA
- Graham C. Walker, Ph.D., American Cancer Society Professor and Howard Hughes Medical Institute Professor, Department of Biology, Massachusetts Institute of Technology, Cambridge, MA
- M. Todd Washington, Ph.D., Professor of Biochemistry and Molecular Biology, Carver College of Medicine, University of Iowa, Iowa City, IA
- Matthew D. Weitzman, Ph.D., Professor of Pathology and Laboratory Medicine, University of Pennsylvania Perelman School of Medicine, Philadelphia, PA
- Marsha Wills-Karp, Ph.D., Chair, Department of Environmental Health and Engineering, Anna M. Baetjer Professor of Environmental Health, Johns Hopkins University, Baltimore, MD
- Richard D. Wood, Ph.D., Professor, Department of Epigenetics & Molecular Carcinogenesis, University of Texas MD Anderson Cancer Center, Houston, TX
- Z. Hong Zhou, Ph.D., Professor, Department of Microbiology, Immunology and Molecular Genetics and Director, Electron Imaging Center for Nano Machines, University of California, Los Angeles, CA

Agenda

Monday, April 25 – ZoomGov meeting

Closed Morning Session

8:30 - 9:00 a.m. Welcome and Discussion of Past and Current BSC Reviews, Drs. Rick Woychik, Darryl Zeldin, William Copeland, Dr. Deanna Kroetz and panel

Monday, April 25 - ZoomGov meeting

Morning Session

9:00 - 9:15 a.m. Welcome, Drs. Deanna Kroetz and Richard Woychik

9:15 - 9:45 Overview, Genome Integrity and Structural Biology Laboratory, William Copeland, Ph.D.

9:45 – 10:30 Mitochondrial DNA Replication Group, William Copeland, Ph.D.
Presentation and Q&A

10:30 – 10:45 Break

10:45 – 11:30 Structural Cell Biology Group, Scott Williams, Ph.D.
Presentation and Q&A

11:30 – 12:15 Mutagenesis and DNA Repair Regulation Group,
Paul Doetsch, Ph.D.
Presentation and Q&A

Afternoon Session

12:15 – 1:30 p.m. Closed Working Lunch

1:30 – 2:15 1:1 Sessions with Investigators, Drs. Copeland, Williams and Doetsch

2:15 – 3:00 DNA Replication Fidelity Group, Tom Kunkel, Ph.D.
Presentation and Q&A

3:00 – 3:45 Structure Function Group, Lars Pedersen, Ph.D.
Presentation and Q&A

3:45 – 4:00 Break

4:00 – 4:45 Nuclear Magnetic Resonance Group, Geoffrey Mueller, Ph.D.
Presentation and Q&A

4:45 – 5:30 1:1 Sessions with Investigators, Drs. Kunkel, Pedersen and Mueller

Tuesday April 26 - ZoomGov Meeting

Morning Session

9:00 – 9:45 a.m. Molecular Microscopy Group, Mario Borgnia, Ph.D.
Presentation and Q&A

9:45 – 10:30 Mechanisms of Genome Dynamics Group, Dmitry Gordenin,
Ph.D.
Presentation and Q&A

10:30 – 10:45 Break

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| 10:45 – 11:15 | 1:1 Sessions with Investigators, Drs. Borgnia and Gordenin |
| 11:15 – 12:15 | Closed Working Lunch |
| 12:15 – 1:45 p.m. | Poster Session |
| 1:45 – 2:15 | Closed Session with GISBL Fellows and Staff Scientists |
| 2:15 – 2:30 | Break |
| 2:30 – 3:30 | Closed Session with Core Director, Drs. Perera, Borgnia, Pedersen, Petrovich and Mueller |
| 3:30 – 5:00 | Closed BSC Discussion and Completion of Review Assignments |
| 5:00 – 6:25 | Debriefing of NIEHS/DIR Leadership |
| 6:25 | Adjourn |

TRAINING AND MENTORING

Goldwater Scholarship

Tanae Lewis, an undergraduate chemistry major at North Carolina A&T University and NIEHS Scholars Connect Program participant conducting research with Dr. Robin Stanley (STL) was awarded a 2022 Goldwater Scholarship: <https://goldwaterscholarship.gov>

BE-STEMM Undergraduate Research Excellence Award

Kamiya Bridges, a Diversity IRTA postbaccalaureate fellow in the Yao group (RDBL) received the Undergraduate Research Excellence Award at the first annual conference for Black Excellence in Science, Technology, Engineering, Mathematics and Medicine/Health (BE-STEMM) organized by the Canadian Black Scientists Network.

Duke Next Generation Leaders

Cassandra Hayne, Ph.D., an IRTA postdoctoral fellow in STL and recipient of a Maximizing Opportunities for Scientific and Academic Independent Careers (MOSAIC) Postdoctoral Career Transition Award to Promote Diversity (K99/R00) was recognized as a Duke Next Generation Leader (<https://sites.duke.edu/nextgenerationleaders/>)

Larry Kupper Award

Michael Nodzinski, an IRTA predoctoral fellow mentored by Dr. Clarice Weinberg in BCBB won the 2021 Larry Kupper Award awarded by the Department of Biostatistics at the University of North Carolina at Chapel Hill for his work developing computation approaches to detect genetic causes of early-onset human diseases. The award recognizes an outstanding publication authored by a graduate student scholar in UNC biostatistics program.

2022 NIH Virtual Postbac Poster Day – Outstanding Posters

The top 20% of poster presented at the NIH Postbac Poster Day in April were recognized as outstanding. Six NIEHS posters presenters were recognized as outstanding.

Abra Granger (GISBL) – Mentors : Drs. Lalith Perera and Roel Schaaper

Isha Wilson (STL) – Mentor: Dr. Robin Stanley

Kamiya Bridges (RDBL) – Mentors: Drs. Barbara Nicol and Humphrey Yao

Lauren Gullett (EB) – Mentors: Drs. Chandra Jackson and Dana Alhasan

Shalyn Brown (MTB) – Mentor: Dr. Ronald Cannon

Sydney Fry (NL) – Mentor: Dr. Jesse Cushman

2022 NIH Summer Internship Program

NIEHS will host 31 summer interns from May thru August 2022. The 2022 program will include both on-site and virtual research experiences, with 17 interns working on-site and 14 virtual. Three SIP interns are funded by NIH OITE and the remainder are funded by NIEHS.

DIR COMMITMENT TO DIVERSITY, EQUITY, INCLUSION AND ACCESSIBILITY

NIH Distinguished Scholars Program

Dondrae Coble, D.V.M., DACLAM, Senior Scientist and Chief of the Comparative Medicine Branch (CMB) was selected to participate in the NIH Distinguished Scholars Program (DSP). This program was recently expanded to include Senior Investigators/Scientists/Clinicians with a strong commitment to enhancing diversity. Dr. Coble will join four DIR Tenure-track Investigators previously selected to the DSP: Drs. Joe Rodriguez (ESCBL), Benedict Anchang (BCBB), Jason Watts (ESCBL) and Carlos Guardia (RDBL).

DIR Diversity, Equity, Inclusion and Accessibility (DEIA) Working Group

A voluntary working group of 50 members including administrative, scientific and scientific support employees, trainees, and contractors representing all DIR Laboratories and Branches has been organized and is co-chaired by Dr. Raja Jothi, Senior Investigator in ESCBL and J'Ingrid Mathis, Chief of ARSB. This working group has been charged with proposing recommendations to the Scientific Director to improve and enhance diversity, equity, inclusion and accessibility throughout the DIR workforce. Initial recommendations are expected to be provided to the Scientific Director and DIR Council in Summer 2022.

The working group is divided into four thematic subgroups each with two co-leaders:

- Subgroup 1: Recruitment and Retention (Joe Rodriguez & Yesenia Rodriguez)
- Subgroup 2: Career Development (Jackson Hoffman & Vince Guerrero)
- Subgroup 3: Performance, Evaluation, and Recognition (Justin Kosak & Franco DeMayo)
- Subgroup 4: Outreach and Engagement (Anne Marie Jukic & Steve Tuyishime)

INTERNATIONAL ACTIVITIES IN DIR FOR FY 2021

Collaborative Research Projects

- Dr. Benedict Anchang (Biostatistics and Computational Biology Branch) collaborates with Dr. Nello Blaser and Dr. Björn Tore Gjertsen at the University of Bergen, Bergen, Norway on integrating single-cell data from multiple patients at an early stage of AML treatment. This collaboration was supported in part by 1ZIAES103350.
- Dr. Stavros Garantziotis (Immunity, Inflammation and Disease Laboratory) collaborates with investigators at the Università Campus Biomedico di Roma, Rome, Italy to study the use of inhaled high-molecular weight hyaluronan in patients with severe COVID-19. This collaboration was supported in part by 1ZIDES102465.
- Dr. Anton Jetten (Immunity, Inflammation and Disease Laboratory) collaborates with Dr. Alex Odermatt at the University of Basel, Basel, Switzerland on the activation of retinoic acid-related orphan receptor $\gamma(t)$ by parabens and benzophenone UV-filters. Dr. Jetten also collaborated with Dr. Thomas Mercher at the Institut de Recherche Saint Louis and Université de Paris, Paris, France on the role of GLIS2 in pediatric acute megakaryoblastic leukemia. Dr. Jetten also collaborates with Dr. Vincent Guen at the Institut de Génétique et Développement de Rennes, Rennes, France and Dr. Jacqueline Lees at the Massachusetts Institute of Technology on GLIS2 signaling regulates mammaryogenesis and claudin-low breast tumorigenesis. Dr. Jetten also collaborates with Dr. Robert Luckey at the University of Western Australia, Perth, Australia and Dr. Andrzej Slominsky at the University of Alabama at Birmingham on understanding the significance of CYP11A1 expression in skin physiology and pathology. These collaborations were supported in part by 1ZIAES101485, 1ZIAES101585, and 1ZIAES101586.
- Dr. Patricia Jensen (Neurobiology Laboratory) collaborates with Dr. Luciane H. Gargaglioni Batalhão at São Paulo State University-UNESP/FCAV, Jaboticabal, Brazil to study the role of locus coeruleus noradrenergic neurons in developmental regulation of breathing patterns and thermoregulation. This collaboration was supported in part by 1ZIAES102805.
- Dr. Anne Marie Jukic (Epidemiology Branch) collaborates with Dr. Cecilia Ramlau-Hansen at Aarhus University, Aarhus, Denmark to study physical activity and reproductive health in the Danish National Birth Cohort. Dr. Jukic also collaborates with Dr. Hong Jiang at Fudan University, Shanghai, China on serum vitamin D concentrations, time to pregnancy, and pregnancy outcomes among preconception couples. These collaborations were supported in part by 1ZIAES103333.
- Dr. Steven Kleeberger and Dr. Daniel Menendez (Immunity, Inflammation and Disease Laboratory) collaborated with Dr. Fernando Polack and Dr. Damian Alvarez at the Fundación INFANT, Buenos Aires Argentina to study the protective effects of lactoferrin against Respiratory Syncytial Virus. Dr. Kleeberger and Dr. Menendez also collaborated with Dr. Fernando Polack, Dr. Damian Paggi and Dr. Mauricio Caballero at the Fundación INFANT, Buenos Aires Argentina to determine whole genome single nucleotide polymorphisms landscape and gene expression profiles of different tissues of

patients with COVID-19. These collaborations were supported in part by 1Z1AES100557 and 1ZIAES103356.

- Dr. Xiaoling Li (Signal Transduction Laboratory) collaborates with Dr. Shuang Tang at Cancer Institute and Department of Nuclear Medicine, Fudan University Shanghai Cancer Center, Shanghai, China to study the role of the intestinal epithelial glucocorticoid receptor in chronic inflammation-associated colorectal cancer. Dr. Li also collaborates with Dr. Yang Wang from the Dalian Medical University, Dalian, China to study the role of RBMS1 in the regulation of lung cancer ferroptosis. Additionally, Dr. Li collaborates with Dr. Zefeng Wang at CAS-MPG Partner Institute for Computational Biology, Chinese Academy of Sciences, Shanghai, China to study the role of SIRT1 in regulation of sphingolipid metabolism and neural differentiation of mouse embryonic stem cells. These collaborations were supported in part by 1ZIAES102205.
- Dr. Alison Motsinger-Reif (Chief, Biostatistics and Computational Biology Branch) collaborates with Dr. Helen Warren at Queen Mary University of London, London, UK and the International Consortium for Antihypertensives Pharmacogenomics Studies (ICAPS) on a meta-analysis of a genome-wide association study of resistant hypertension. Dr. Motsinger-Reif also collaborates with Dr. Gordon Smith at the University of Cambridge, Cambridge, UK on a study dissecting the etiology of adverse pregnancy outcomes. These collaborations were supported in part by 1ZIAES103335.
- Dr. Geoffrey Mueller (Genome Integrity and Structural Biology Laboratory) collaborates with Dr. Fatima Ferreira at the Paris Lodron University of Salzburg, Salzburg, Austria on a study characterizing the Bet v 1 and BM4 antibodies. This collaboration was supported in part by 1ZIAES102906.
- Dr. Lisa Rider (Clinical Research Branch) collaborates with Dr. Adriana Sallum at Pediatric Rheumatology Unit, Children's Institute, School of Medicine, University of Sao Paulo, Brazil, to study environmental risk factors for juvenile dermatomyositis. She also collaborates with Dr. Lucy Wedderburn at the University College of London on an exome chip analysis of genetic risk factors for juvenile dermatomyositis. Additionally, Dr. Rider collaborates with Dr. Rie Karasawa at St. Marianna University School of Medicine, Kawasaki, Japan and Dr. James Jarvis at the University of Buffalo on anti-endothelial autoantibodies in juvenile dermatomyositis. Dr. Rider and Dr. Frederick Miller (Clinical Research Branch) also collaborate with Dr. Janine Lamb at the University of Manchester, Manchester, UK, and Dr. Christopher Amos at Baylor College of Medicine on an exome chip analysis of genetic risk factors for juvenile dermatomyositis. Dr. Rider, Dr. Miller, and Dr. Adam Schiffenbauer (Clinical Research Branch) collaborate with Dr. Lorenzo Cavagna at the Fondazione I.R.C.C.S. Policlinico San Matteo, Pavia, Italy, and Dr. Rohit Aggarwal at the University of Pittsburgh on classification criteria of antisynthetase syndrome. These collaborations were supported in part by 1ZIAES101074.
- Dr. Dale Sandler (Chief, Epidemiology Branch) collaborates with Dr. Anthony Swerdlow at the Institute of Cancer Research, London, UK, Dr. Hazel Nichols at the University of North Carolina at Chapel Hill and investigators participating in the NCI Cohort Consortium, to identify contributors to breast cancer risk among premenopausal women. This collaboration was supported in part by 1ZIAES044005.

- Dr. Robin Stanley (Signal Transduction Laboratory) collaborates with Dr. Alan Warren at the University of Cambridge, Cambridge, UK, on structural studies of eukaryotic ribosome assembly. This collaboration was supported in part by 1ZIAES103247.
- Dr. Carmen Williams (Reproductive and Developmental Biology Laboratory) collaborates with Dr. Wei Xie at Tsinghua University, Beijing, China and Dr. Richard Schultz at the University of California, Davis on a project to study the regulation of murine zygotic genome activation. This collaboration was supported in part by 1ZIAES102985.
- Dr. Darryl Zeldin (Scientific Director and Senior Investigator in the Immunity, Inflammation and Disease Laboratory) collaborated with Dr. Tim Warner and Dr. Jane Mitchell at the William Harvey Research Institute, Queen Mary University of London, London, UK, to measure eicosanoids in mice and humans with cyclooxygenase deficiency. Dr. Zeldin also collaborated with Dr. Jacques Behmoaras at Imperial College London, London, UK, to study the role of eicosanoids in type 2 diabetes and non-alcoholic fatty liver disease. Additionally, Dr. Zeldin collaborated with Dr. Hui Huang at Sun Yat-Sen University in Guangzhou, China to understand the role of sEH in cardiomyopathy. Finally, Dr. Zeldin collaborated with Dr. John Seubert at the University of Alberta, Edmonton, Canada to study the role of sEH in cardiac physiology. These collaborations were supported in part by 1ZIAES025034.

International Meetings Organized

- Dr. William Copeland (Chief, Genome Integrity and Structural Biology Laboratory) helped organize the 25th anniversary meeting of the United Mitochondrial Disease Foundation. The meeting was held virtually in May and June 2021
- Dr. Lisa Rider (Clinical Research Branch) helped organize the annual meeting of the International Myositis Assessment and Clinical Studies Group. The meeting was held virtually on November 18, 2020.
- Dr. R. Scott Williams (Genome Integrity and Structural Biology Laboratory) helped organize the EMBO Workshop on DNA Topology in genomic transactions. This meeting was held virtually from September 20 through September 23, 2021.
- Dr. Humphrey Yao (Reproductive and Developmental Biology Laboratory) helped organize the First Virtual International Symposium on Vertebrate Sex Determination. This meeting was held virtually from October 4 through October 6, 2021.

Work with International, Multinational or Regional Foreign Organizations

- Dr. Steven Kleeberger and Dr. Daniel Menendez (Immunity, Inflammation and Disease Laboratory) are members of the Fundación Infant (INFANT) a nonprofit organization founded by Argentine physicians in 2003, whose mission is to investigate the causes of respiratory diseases that severely affect children, such as asthma, bronchiolitis, pneumonia, and influenza.

Dr. Geoffrey Mueller (Genome Integrity and Structural Biology Laboratory) served as a member of the World Health Organization / International Union of Immunological Societies (WHO/IUIS) Allergen Nomenclature Sub-Committee. This multi-national organization consists of experts from 5 continents and aims to maintain a consistent list of existing and new allergens with references to the exact sequences and publications. This activity was supported in part by 1ZIAES102906.

Dr. Lisa Rider, Dr. Frederick Miller, and Dr. Adam Schiffenbauer (Clinical Research Branch) are members of the International Myositis Genetics Consortium (MYOGEN) that defines genetic risk and protective factors for myositis. They are also members of the International Myositis Assessment and Clinical Study (IMACS) Group which seeks to standardize the conduct and reporting of myositis clinical studies and engage in collaborative myositis research studies. This work is supported in part by 1ZIAES101074 and 1ZIAES101081.

Dr. Dale Sandler (Chief, Epidemiology Branch) is one of 4 investigators leading the Premenopausal Breast Cancer Collaborative Group. Other PIs are Hazel Nichols (University of North Carolina), and Anthony Swerdlow and Minouk Schoemaker (The Institute of Cancer Research, London, UK). This is an international consortium of more than twenty prospective cohort studies investigating factors associated with risk for breast cancer diagnosed among women under age 50. This work is supported in part by 1ZIAES044005.

Dr. Humphrey Yao (Reproductive and Developmental Biology Laboratory) served as the elected Director for the Society for the Study of Reproduction.

Foreign Delegations Hosted

No Activities to Report

International Capacity Building

No Activities to Report