Division of Intramural Research

NAEHS Council Update

June 2020

DIR RECRUITMENT

Chief of the Signal Transduction 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 Signal Transduction Laboratory (STL) within the Division of Intramural Research (DIR). In addition to directing his/her own independent research program, the Chief will have responsibility for leading STL 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. Trevor Archer, NIH Distinguished Investigator and Chief of the Epigenetics and Stem Cell Biology Laboratory serves as chair of the search committee which was launched on March 24, 2020.

Tenure-Track Investigator in the Clinical Research Branch
The National Institute of Environmental Health Sciences (NIEHS) is recruiting outstanding candidates for a Tenure-Track Investigator position in the Clinical Research Branch within the Division of Intramural Research at the NIEHS in Research Triangle Park, NC. The individual selected for this position will have a strong record of participation and publications in patient-oriented research defined as research that requires direct interactions with human subjects and may include the development of new technologies, understanding mechanisms of human disease, therapeutic interventions and/or clinical trials. 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 direct clinical research experience, with three or more years of research training in clinical research and publications and other evidence of the ability to design and carry out original, innovative patient-oriented research. Dr. Alison Motsinger-Reif, Chief of the Biostatistics and Computational Biology Branch serves as chair of the search committee which was launched July 8, 2019.

Tenure-Track Investigator in the Immunity, Inflammation and Disease Laboratory
The National Institute of Environmental Health Sciences (NIEHS) is recruiting outstanding candidates for a Tenure-Track Investigator position in the Immunity, Inflammation and Disease Laboratory (IIDL) within the Division of Intramural Research (DIR). The IIDL is interested in candidates with expertise in the area of extracellular matrix biology, innate immunity and lung inflammatory diseases and airway remodeling triggered by the environment. The successful candidate is expected to lead an innovative, independent research program exploring the role of extracellular matrix in environmentally-induced lung disease that enhances our understanding the effects of the environment on human health. Applicants should have a Ph.D., M.D. and/or equivalent doctoral degree with three or more years of postdoctoral research experience in their field and an outstanding publication record. Dr. Francesco DeMayo, Chief of the Reproductive and Developmental Biology Laboratory serves as chair of the search committee which was launched in February 21, 2020.

Scientific Information Officer
The Division of Intramural Research is seeking an accomplished scientist in information technology to take on a leadership position as the NIEHS Scientific Information Officer (SIO). This individual will head the Office of Scientific Computing (OSC) and will lead a team that is directly focused on scientific information technology. The ideal candidate will have a record of accomplishment in information technology support to a scientific enterprise as well as application to basic and clinical research. Applicants should have a Ph.D., M.D., or equivalent advanced degree. Dr. Charles Schmitt, Director of the Office of Data Science serves as chair of the search committee which was launched on July 11, 2019.

Metabolomics Lead
The Division of Intramural Research of the National Institute of Environmental Health Sciences (NIEHS) is recruiting a Staff Scientist to function as the Metabolomics Lead within the Mass Spectrometry Research and Support Group. We are seeking an experienced scientist with a proven track record to increase the capabilities and capacity of metabolomic studies at NIEHS. The Metabolomics Lead will develop and implement innovative mass spectrometry-based metabolomic analytical methods to support the research needs of NIEHS investigators. The ideal candidate will also have extensive experience developing pipelines for analysis, visualization and interpretation of complex omics data and will work closely with members of the Integrative Bioinformatics Support Group. Dr. Xiaoling Li, Senior Investigator in the Signal Transduction Laboratory serves as chair of the search committee which was launched on February 12, 2019.

Recruitment of 2019-20 NIH Earl Stadtman Investigator Finalists
In addition to targeted recruitment, DIR is actively seeking outstanding scientists through the central NIH Stadtman recruitment mechanism. Seven outstanding candidates from a range of disciplines central to the NIEHS mission were interviewed. Two candidates were offered positions with one declining and the second pending.

NEW APPOINTMENTS IN DIR

New Tenure-Track Investigators

Dr. Jason Watts from the Life Sciences Institute at the University of Michigan has accepted an offer to join the Epigenetics and Stem Cell Biology Laboratory as an Earl Stadtman Tenure Track Investigator. Dr. Watts will initiate an independent research program focused on understanding the mechanism of RNA polymerase pausing and its role in disease. He was also selected as a member of the NIH Distinguished Scholars Program. Dr. Watts is scheduled to start at NIEHS in August 2020.

TRAINING AND MENTORING

2020 NIEHS Biomedical Career Symposium
The Twenty Third Annual NIEHS Biomedical Career Symposium was postponed due to the COVID-19 pandemic and will be held in a limited virtual format on Friday, July 24, 2020. The symposium will consist of selected workshops from the original program as well as CV/Resume Review sessions.

International Association for Dental Research Award
Sing-Wai Wong, D.D.S., Ph.D., a fellow in the Inflammation and Autoimmunity Group within the Immunity, Inflammation and Disease Laboratory was awarded the 2020 Philips Oral Healthcare Young Investigator Award from the International Association for Dental Research (IADR) for his project "Non-canonical autophagy modulates periodontal inflammation". The award will be presented at the 2020 IADR National Meeting and includes a $10,000 grant for research and travel expenses. Dr. Wong is mentored by Dr. Jennifer Martinez.

INTERNATIONAL ACTIVITIES IN DIR FOR FY 2019

Collaborative Research Projects

Dr. Donna Baird (Epidemiology Branch) collaborated with researchers at the Norwegian Institute of Public Health (Oslo, Norway) analyzing the association between measured concentrations of hemoglobin A1c (a measure of blood glucose) and measures of fetal growth (birth weight and length), length of gestation and pregnancy complications (preeclampsia and birth defects). She also collaborated with researchers at Kaukeland University Hospital, Bergen, Norway, on analyzing population data from Norway to investigate associations between preeclampsia at the time of a term birth and later childhood neurodevelopmental outcomes. Another collaboration with researchers at the Department of Global Public Health and Primary Care at the University of Bergen in Norway, on analysis of data from the Norwegian Medical Birth Registry to investigate whether women experiencing preeclampsia, placental abruption, stillbirth, neonatal death or small-for-gestational age complications in their first term birth were at increased risk of preterm birth in their next pregnancy.

Dr. Perry Blackshear (Signal Transduction Laboratory) collaborates with investigators at the MRC Laboratory of Molecular Biology, Cambridge, United Kingdom, studying the interactions of tristetraprolin family proteins with the CCR4-NOT deadenylase complex, and with investigators at the Institute for Medical Immunology at the Free University of Brussels, studying the involvement of tristetraprolin in inflammation of the skin. These collaborations were supported in part by 1ZIAES090080.

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) collaborated as part of an international team that identified the first series of pathogenic mutations in the mitochondrial single-stranded DNA binding protein, SSBP1, that causes optic atrophy and associated mitochondrial disease symptoms. This collaborative team consisted of scientists from Italy (University of Bologna; Fondazione IRCCS Istituto Neurologico C. Besta; and the Istituto delle Scienze Neurologiche di Bologna), Germany (Helmholtz Zentrum München, and the Technische Universität München), Pakistan (Division, National Institute for Biotechnology and Genetic Engineering and Pakistan Institute of Engineering and Applied Sciences) and Sweden (University of Gothenburg). He is also leading a collaboration with colleagues at Newcastle upon Tyne University, UK on the ultrasensitive detection of mitochondrial DNA deletions in POLG disease patients and normal individuals. The signatures of these mtDNA deletions link disease to aging and provide insight to the mode of DNA replication. These collaborations were supported in part by 1ZIAES065078 and 1ZIAES065080.

Dr. Guohong Cui (Neurobiology Laboratory) collaborates with investigators at Peking University, Beijing, China to develop genetically encoded fluorescent biosensors. He also collaborates with investigators at Jilin University, Changchun, China to study the etiology, diagnosis and treatment of Parkinson's disease. These collaborations were supported in part by 1ZIAES103310.

Dr. Kelly Ferguson (Epidemiology Branch) collaborates with scientists at Erasmus Medical Center, Rotterdam, The Netherlands, to investigate environmental chemical exposures during pregnancy, fetal growth, and childhood health outcomes. This collaboration is supported in part by ZIAES101575.

Dr. Stavros Garantizotis (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.

Drs. Patricia Jensen and Nicholas Plummer (Neurobiology Laboratory) collaborate with scientists at the São Paulo State University-UNESP/FCAV at Jaboticabal, São Paulo, 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. Anton Jetten (Immunity, Inflammation and Disease Laboratory) collaborates with: Dr. Bing Hu at the Peninsula Dental School University of Plymouth, Plymouth, UK on identification of novel pathway involving interaction of Glis2 with prominin in stem cells in relation to primary cilium signaling; Prof. Dr. Bernhard Schermer at the University Hospital of Cologne, Cologne, Germany on understanding the role of GLIS2 in end-stage renal disease. These collaborations are supported in part by 1ZIAES101585. He also collaborates with: Dr. Anna A. Brożyna in the Department of Tumor Pathology and Pathomorphology at Nicolaus Copernicus University Collegium Medicum in Bydgoszcz, Poland on the characterization of the roles of nuclear receptors RORα and RORγ in the progression of human melanoma; Dr. Robert C. Tuckey at the School of Molecular Sciences at The University of Western Australia, Perth, Australia on the identification of vitamin D metabolites as inverse agonists of RORα and RORγ; and Dr. Alex Odermatt from the Division of Molecular and Systems Toxicology and the Department of Pharmaceutical Sciences at the University of Basel, Basel, Switzerland on the enzymatic control of intracellular availability of the RORγ ligand 7β,27-dihydroxycholesterol by 11β-HSD1 and 11β-HSD2. These collaborations were supported in part by 1ZIAES101586

Dr. Raja Jothi (Epigenetics and Stem Cell Biology Laboratory) collaborates with Dr. Matthias Mann at the Max Planck Institute of Biochemistry, Munich, Germany, and Drs. David James and Jean Yang at the University of Sydney, Sydney, Australia, to characterize the temporal dynamics of the phosphoproteome, proteome, epigenome, and transcriptome during transition from naïve to primed pluripotency. The overall goal of this study is to reconstruct signaling networks, elucidate cell surface markers characteristic of the naïve and primed pluripotent states, characterize cross-talk between various signaling pathways, and predict previously unknown substrates for key kinases. These collaborations were supported in part by 1ZIAES102625.

Dr. Anne Marie Jukic (Epidemiology Branch) collaborates with Dr. Daniel Roth at The Hospital for Sick Children in Toronto, Canada to examine the correlation between vitamin D supplementation and toxic metal absorption. She also collaborates with Dr. Anne Eskild from the Department of Obstetrics and Gynecology at Akershus University Hospital in Oslo, Norway on studies of the importance of early pregnancy for understanding pregnancy complications or birth outcomes.

Dr. Steven Kleeberger (Immunity, Inflammation and Disease laboratory) collaborates with scientists at Tohoku University in Sendai, Japan on the role of Nrf2 in susceptibility to oxidant-induced lung injury. This collaboration is supported in part by 1ZIAES100513. He collaborates with scientists at the Pontifical Universidade Catolica do Rio Grande do Sul (PUCRS) in Porto Alegre, Brazil on evaluation of environmental aspects, life habits and pathological conditions in child development. This collaboration is supported in part by 1Z1AES100557. He also works with scientists at the INFANT foundation in Buenos Aires, Argentina on mechanisms of innate immunity and susceptibility to respiratory syncytial virus (RSV) in mice and humans. This collaboration is supported in part by Z01 ES 100557. Another collaborative project with INFANT investigators is designed to identify the role of oxidant susceptibility genes in severity of neonatal diseases associated with hyperoxic injury. This collaboration is supported in part by 1DC1 ES 003-01, Z01 ES 100513, and the Clinical Research Branch.

Dr. Stephanie London (Epidemiology Branch) collaborated with investigators at National Institute of Public Health in Oslo, Norway as part of the Norwegian Mother and Child Cohort. These studies were supported in part by 1ZIAES49019.

Dr. Frederick Miller (Clinical Research Branch) collaborates with scientists at the Pediatric Rheumatology Unit, Children's Institute, School of Medicine, University of Sao Paolo, Brazil, to study environmental factors in myositis. He also collaborates with scientists at the Epidemiology and Public Health Group, The University of Manchester defining new risk and protective genetic factors for myositis. These collaborations are supported in part by 1ZIAES101074.

Dr. Geoffrey Mueller (Genome Integrity and Structural Biology Laboratory) collaborates with scientists at the University of Salzburg, Salzburg, Austria and the University of Amsterdam, Netherlands on Peanut and Tree Nut Cross-Reactive Allergens and with scientist at University of Salzburg on natural products from birch pollen as adjuvants of allergic sensitization. Dr. Mueller collaborates with scientists at the Technical University of Munich, Germany on identification of pollens from ambient air samplers. These collaborations were supported in part by 1ZIAES102906.

Dr. Lisa Rider (Clinical Research Branch) collaborates with scientists at Pediatric Rheumatology Unit, Children's Institute, School of Medicine, University of Sao Paolo, Brazil, to study environmental factors in myositis. She also collaborates with scientists at the University College of London and Great Ormand Street Hospital to examine genetic risk factors for juvenile dermatomyositis. These collaborations are supported in part by 1ZIAES101074.

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; and with investigators at the Department of Industrial Chemistry, University of Bologna, Bologna, Italy, to study the function of *E. coli* dGTP triphosphohydrolase. These collaborations were supported in part by 1ZIAES065086 and 1ZIAES101905.

Dr. Stephen Shears (Signal Transduction Laboratory) has collaborations with scientists at the Leibniz-Institut für Molekulare Pharmakologie in Berlin, Germany and at the University of Freiburg, Freiburg, Germany on the synthesis and application of synthetic inositol pyrophosphate cellular signals, and analogues, to research metabolism and functions of inositol pyrophosphates in intact cells; and with scientists at The Rolf Luft Research Center for Diabetes and Endocrinology, Karolinska Institutet, Stockholm, Sweden on understanding the roles of inositol pyrophosphates on insulin secretion by pancreatic beta-cells. These collaborations were supported in part by 1ZIAES080046.

Dr. Robin Stanley (Signal Transduction Laboratory) collaborates with scientists at the University of Graz (Humdoldstrasse, Austria) and the University of Toronto (Toronto, Canada) to study AAA-ATPases involved in ribosome assembly. These collaborations were supported in part by ZIA ES103247.

Dr. Paul Wade (Epigenetics and Stem Cell Biology Laboratory) collaborates with Dr. Karin Weiss at the Ramban Medical Center in Haifa, Israel on a novel neurodevelopmental syndrome caused by de novo mutations in the chromatin remodeling factor CHD4; and Dr. Hitoshi Kurumizaka at University of Tokyo in Tokyo, Japan on the interaction of transcription factors with nucleosomes. These studies have produced a cryoEM structure of a sequence-specific eukaryotic DNA binding protein in complex with a nucleosomal substrate. These collaborations were supported in part by 1ZIAES101965.

Dr. Clarice Weinberg (Biostatistics and Computational Biology Branch) collaborates with scientists at the University of Bergen, Norway, the Medical Birth Registry of Norway to investigate possible seasonal effects on pregnancy outcomes, such as preterm birth, fetal growth and preeclampsia. She also collaborates with Drs. Anthony Swerdlow and Minouk Schoemaker and other members of the Premenopausal Breast Cancer Collaborative Group. These collaborations were supported in part by 1ZIAES040007 and 1ZIAES040006.

Dr. Allen J. Wilcox (Epidemiology Branch) is collaborating with investigators at the University of Bergen, Bergen, Norway, and the National Public Health Institute in Oslo, Norway, on the association of fetal growth with later risk of neurodevelopmental disabilities, the links between preeclampsia and mother's later risk of cardiovascular disease, the role of maternal glucose regulation in healthy pregnancy, predictors and sequelae of miscarriage, and various aspects of fertility and maternal health. These collaborations are supported in part by 1ZIAES044003.

Dr. R. Scott Williams (Genome Integrity and Structural Biology Laboratory) is collaborating with Dr. Felipe Cortes at Ledesma, CABIMER (Andalusian Molecular Biology and Regenerative Medicine Centre) in Seville, Spain on the mechanism by which the TDP2 protein catalyzes removal of DNA-protein crosslinks. He is also collaborating

with Dr. Daniel Durocher Lunenfeld-Tanenbaum Research Institute, Toronto, Canada on studying the mechanism of APE2 DNA repair nuclease functions. These collaborations were supported in part by 1ZIAES102765.

Dr. Samuel H. Wilson (Genome Integrity and Structural Biology Laboratory) collaborated with Dr. Shunichi Takeda and his associates at Kyoto University, Kumatori, Japan, to reveal a new DNA repair pathway. This newly revealed pathway is a backup system for correcting UV-light induced DNA damage. The backup system operates when cells are deficient in the main UV-induced repair, known as Nucleotide Excision Repair (NER). The NER backup system is initiated by Topoisomerase I lesion recognition and strand incision; then DNA polymerase beta conducts strand displacement repair patch synthesis, in the process known as long patch Base Excision Repair. This work is described in an article now in press in The Proceedings of the National Academy of Science, USA. The collaboration was supported in part by 1ZIAES050158 and 1ZIAES050159.

Dr. Darryl Zeldin (Scientific Director and Senior Investigator in the Immunity, Inflammation and Disease Laboratory) and Dr. Matt Edin (Staff Scientist in Immunity, Inflammation and Disease Laboratory) collaborated with scientists at the William Harvey Research Institute, Queen Mary University of London, London, UK, to measure eicosanoids in mice and humans with cyclooxygenase deficiency; also with scientists at University College London, London, UK, to measure the difference in eicosanoids in inflammatory exudates from young and aged humans. Dr. Zeldin also collaborates with investigators at Royal Veterinary College, London, UK, to determine the role of fatty acid epoxides in resolution of inflammation. He also collaborated with researchers at Tongji Medical College, Wuhan, China, to investigate the role of CYP2J2 in cardiovascular physiology. Dr. Zeldin is collaborating with scientists at Sun Yat-Sen University in Guangzhou, China to understand the role of sEH in diabetes. Dr. Zeldin also collaborated with scientists at University of Alberta, Edmonton, Canada, to measure eicosanoids in plasma to examine the role of sEH in cardiac responses to inflammation. Imperial College London, London, England measured eicosanoids in plasma to examine the role of lipid mediators in type 2 diabetes and non-alcoholic fatty liver disease. Dr. Zeldin also collaborated with scientists at the University of Copenhagen, Copenhagen, Denmark to measure eicosanoids in plasma from a cohort of mothers treated with omega-3 supplements during pregnancy. The goal is to understand how lipid mediators may regulate asthma or inflammatory disease progression in the newborn children. These collaborations were supported in part by 1ZIAES025034.

International Meetings Organized

Dr. Donna Baird (Epidemiology Branch) organized a day-long seminar on the Basic Science of Uterine Fibroids. The meeting took place at NIEHS on February 28, 2020 with 80 attendees. Invited speakers included scientists from Spain (Igenomix Foundation and Valencia University, Valencia, Spain) and Italy (Vito Fuzzi Hospital, Lecce, Italy).

Dr. Kenneth Korach (Reproductive and Developmental Biology Laboratory) served on the international program and speaker organizing committees for the 14th Ovarian Club

Meeting on Basic research studies affecting fertility and reproductive health in Hong Kong.

Dr. Darryl Zeldin (Scientific Director and the Immunity, Inflammation & Disease Laboratory) served on the Organizing Committee for the 18th International Winter Eicosanoid Conference and as a Scientific Program Advisor for the 16th International Conference on Bioactive Lipids in Cancer, Inflammation and Related Disease in St. Petersburg, FL.

Work with International, Multinational or Regional Foreign Organizations

Dr. Steven Kleeberger (Immunity, Inflammation and Disease laboratory) is a member 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. This work is supported in part by 1ZIAES100557.

Dr. Kenneth Korach (Reproductive and Developmental Biology Laboratory) served as an International lecturer as part of the Course on Toxicology at Hong Kong University, lecturing on Reproductive and Developmental Toxicology and Endocrine Disruptors.

Dr. Stephanie London (Epidemiology Branch) continued to lead the Pregnancy and Childhood Epigenetic Consortium, an international consortium of birth and childhood cohorts that collect and utilize genome-wide methylation data. This work was supported in part by 1ZIAES049019.

Dr. Frederick Miller (Clinical Research Branch) is the founder and coordinator of the International Myositis Genetics Consortium (MYOGEN) that defines genetic risk and protective factors for myositis; is a co-founder of The International Myositis Assessment and Clinical Study (IMACS) Group to standardize the conduct and reporting of myositis clinical studies; and is a member of The International Myositis Classification Criteria Project (IMCCP) to develop new classification criteria for myositis and its subgroups. This work is supported in part by 1ZIAES101074 and 1ZIAES101081.

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 activity was supported in part by 1ZIAES102906.

Dr. Lisa Rider (Clinical Research Branch) is a member of the International Myositis Genetics Consortium (MYOGEN) that defines genetic risk and protective factors for myositis; is a member of The International Myositis Assessment and Clinical Study (IMACS) Group to standardize the conduct and reporting of myositis clinical studies; and is a member of The International Myositis Classification Criteria Project (IMCCP) to develop new classification criteria for myositis and its subgroups. 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. Publications in FY 2019 reported on breast cancer risk associated with recent childbirth and the paradoxical decreased risk associated with obesity in young women. This work is supported in part by 1ZIAES044005.

Foreign Delegations Hosted

No Activities to Report

International Capacity Building

No Activities to Report